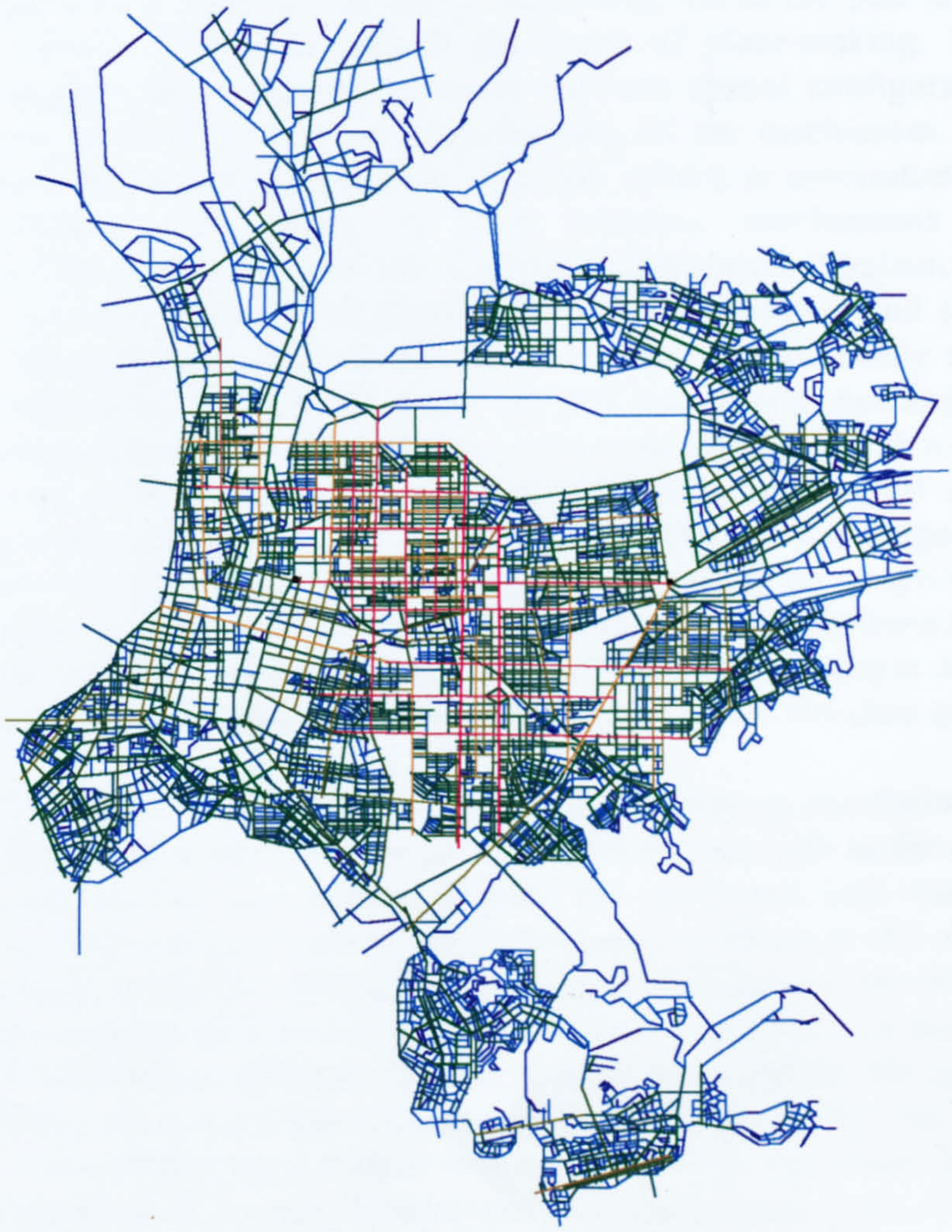
PLACE-MAKING AND SPATIAL TRANSFORMATION
---- A CASE STUDY OF TAIPEI, TAIWAN



A Thesis submitted for the degree of Doctor of Philosophy

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Place-making and spatial transformation---a case study of Taipei, Taiwan

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ABSTRACT

This thesis presents a study of the spatial transformation of the past and present city centres in Taipei, Taiwan to address the issues of place-making. The main objective is to explore the interactive relations between spatial configurations and daily life patterns in order to gain an understanding of the mechanism of spatial transformation and the underlying structure of urban pattern in association with the socio-cultural meaning. The study of these relations, mechanisms and the demystification of the underlying structure employs an integrated pluralistic approach which includes both quantitative and qualitative research strategies, and synchronic and diachronic investigations. This thesis uses a comparative case-study method to appreciate the relationship between everyday life and the cultural meaning of urban form and the variation in spatio-culture within a historical context, which together are understood as vital to the promotion of place-making. A morphological analysis is conducted to trace the city's spatial evolution over time. The analysis ranges from the city's macro-level to the urban quarter's micro-level, using the graph-theoretical techniques of space syntax and statistics. The analysis is strengthened by field research designed to gather a variety of interrelated data for the in-depth analyses of two urban centres: the old Hsimenting quarter and the new urban Dinghou quarter.

The thesis identifies four major aspects. First, there is a strong correlation between the movement pattern of people and certain occupational uses such as the mixed use of commercial and institutional sectors. Second, the traditional and contemporary quarters differ in their syntactic values which indicate variations in the ordering of spatial configurations in the city. Third, the prime cultural features of the old and new urban centres are formed as a historical conjuncture of colonial and post-colonial products that are reflected in different types of spatial forms. Fourth, the genotype of the old urban centre arises from the articulation of temple space with narrow market streets, and its configuration has a deeper structure relative to the whole. In contrast, the spatial configuration of the new urban centre is distinguished by its shallow grid pattern. Its genotype is composed of the modern mega shopping mall and grand street which have a shallower depth value relative to other urban spaces of the city and converge to become the new spatial centre in Taipei today.

The outcome is a specifically cultural understanding of place-making, rather than general knowledge of spatial transformation. In particular, this way of 'reading' the underlying structure provides resources for characterizing the identity that gives meaning to place-making. The study also shows that the change of underlying rules, meanings and functions of urban spatial forms is in accordance with the modification of activity patterns, which is encouraged by specific groups. Thus, place-making is the result of the constant interplay of culture and tradition, which is necessarily articulated with the current situation of the spatial environment, but the validity of this interplay and articulation can only be evaluated by some form of concrete practice.

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My daughter was born while this thesis was in the making. The future of place-making will be in the hands of her generation, and so I dedicate this thesis to her.

PLACE-MAKING AND SPATIAL TRANSFORMATION ------- A CASE STUDY OF TAIPEI, TAIWAN

CHAPTER ONE: INTRODUCTION

CONTENTS

CHAPTER TWO: PLACE-MAKING AND TRANSFORMATION -- A THEORETICAL PERSPECTIVE

CONTENTS

CHAPTER TIIREE: RESEARCH METHODOLOGY

CONTENTS

CHAPTER FOUR: SPATIAL TRANSFORMATION IN TRANSITIONAL CONTEXT: THE EXPERIENCE OF SPATIAL CHANGE IN THE URBAN DEVELOPMENT OF TAIPEI

CONTENTS

CHAPTER FIVE: READING THE CONTEMPORARY WESTERN ZONE ----- THE DEEP STRUCTURE OF URBAN SPACE IN THE OLD CITY CENTRE OF TAIPEI

CONTENTS

CHAPTER SIX: READING THE NEW EASTERN ZONE --- THE DEEP STRUCTURE OF URBAN SPACE IN THE NEW URBAN CENTRE OF TAIPEI

CONTENTS

CHAPTER SEVEN: PLACE-MAKING AS A CRITICAL PROCESS OF SPATIAL TRANSFORMATION

CONTENTS

CHAPTER EIGHT: CONCLUSION

CONTENTS

LIST OF TABLES AND FIGURES

All photographs were taken by the author in 1999, 2001 and 2002. Otherwise, the photographs are acknowledged. Similarly, all tables were produced by the author with the source material indicated.

Front cover: The axial drawing of Taipei in 1998

CHAPTER ONE

CHAPTER TWO

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

CHAPTER SIX

APPENDIX 1

Appendix 2

Back cover illustration: A view of an old street in Hsimenting

CHAPTER ONE: INTRODUCTION

CONTENTS

Chapter 1: Introduction

1.1 Prologue: The problematic of spatial development in Taiwan

> ' ..... *Tradition life and custom are being alienated from our contemporary spatial environment. They seem to be lost forever in the current milieu of dominant Western civilisation.*' (Wu, Po-lin, 1992:140)

The urban history of Taiwan has been undergoing continuous change for more than three centuries from the late Ming Dynasty's Chang Ch'eng-Kung, the Ch'ing Dynasty, and the period of the Japanese Occupation up to the present. In recent years the structure and lifestyle of the society and traditional values have been swept away, as Western values have become dominant. The city space of Taipei is changing as a result of inter-weaving, replacing, masking, contrasting or compromising traditional society during the last fifty years. The images and character of Taipei have been changing swiftly, rendering its story and historical landmarks difficult to find. This is seen as very problematic for our present urban environment, as Wu (1992) vividly pointed out. These changes have illustrated two main issues. Firstly, they bring about the tension between the modern and the traditional in Taiwan that causes the problems of cultural conflict and cultural readjustment in the present complex and hybrid spatial environment. The spatial environment constructed under the era of late-capitalism[1] is fundamentally different to those spaces and architecture in traditional society, which are usually embraced with cultural sensitivity and identity as a reflection of the cultural life of a society[2]. Secondly, the discontinuity of historical context has caused a crisis of collective spatial identity and order in our present spatial environments that suggests the need to explore how they are formed and transformed, adapted and contested. Given this circumstance, Taipei has posited itself in a difficult situation or dilemma such that it is hard to clarify the true "local" sense of urban space necessary for the future spatial development of the city, and the essence of place-making.

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[1] According to Fredric Jameson (1998), the moment of capitalism was to date back in the late 1940s and the early 1950s in the United States. Nowadays, we situate in a new period of 'late capitalism' as a result of the emergence of new formal features in culture with the emergence of a new type of social life and a new economic order affected by the electronic communication superhighway.

[2] Some scholars in the field of architecture also mention the values of traditional built environments in reflecting the genuine cultural life of a society. See Norberg-Schulz, 1971, Rapoport, 1977, Kuo, 1998.

Such problems have brought the focus of this thesis on the investigation of spatial transformation of city centres over time in Taipei, Taiwan in order to preserve the useful aspects of cultural heritage from the decline of tradition. An examination of the concepts of place-making and urban development, as well as urban built form in the spatial context of city centres will complement this study. Thus, a concern with all these aspects promises to return the study of place-making processes back to the centre of inquiry on 'space and culture' in the urban development of the city.[3] The understanding of these two components, their relationships and deeper meanings, is indeed essential to help reveal the physical built forms, as well as the patterns, structures, and everyday operations of a specific setting, Taipei. This requires a comprehensive study of the socio-cultural context of spatial built form.

So the conceptual domain of investigation in this research is the spatialisation of urban built form, which is empirically specific to locality. This involves measuring the reflection of cultural and social dispositions in the spatial configuration of Taipei, with particular reference to the transformation of public domain of two spatial elements, namely square space and main street space over time. The discussion will concentrate on developing specific structural socio-cultural and spatial mechanisms, which are considered in this thesis to be the crucial links between humans and their habitation milieu and are required to complete the overall picture of development and transformation.

1.2 Research approach for searching new cultural space

Spatial transformation is a complex process, which has reflected the reality of the city throughout the long history of Taiwan. The study of this process allows us not only to comprehend the mechanisms of changes in urban space through the exploration of the spatial phenomenon over time, but also to understand the representation of place which signifies the meaning of the physical form of urban space, which is embedded with socio-cultural identity. In so doing, spatial transformation needs to be investigated at three hierarchical levels: 1) At the city's macro level: It is the study of the city as a whole in

[3] According to Rapoport (1977:1-4), space and culture are two innate components in the constitution of the mechanisms that link people and environments.

which we can discover how the transformation of the city's configuration was related to the ideology of political power and the cultural process fed by historically grown differences; 2) At the district level: It is the study of dual centres of the city, i.e., the old city centre at the Western zone and the new urban centre in the Eastern zone of Taipei. A comparison of these two districts will show the transformation of these districts which reflects their spatial difference related to the rules of underlying structures; 3) At the sub-area's micro level: It will study some particular urban spaces such as temple square space and street space in a neighbourhood area. Direct observations of daily life activities within these urban spaces were conducted to assess how people interact with and respond to such spaces today.

The investigation at these three levels will not only give an overall picture of how spatial transformation was affected by the inter-related issues of spatial development, but also will bring potential perspectives for suggesting what we should consider for the process of place-making and how to make a good place with sensible and authentic new cultural space in this contemporary complex and hybrid cultural environment.[4] A critical sense should be addressed to local customs, habits, and culture of the society as well. The reading of spatial transformation at the three hierarchical levels has to rely on an integrated approach based on the theoretical framework of the research as suggested in the following chapter. The integrated approach was conducted with space syntax analysis and statistical analytical methods for spatial analysis. The results of quantitative analysis provide strong evidence in parallel with historical facts to illustrate the rules of spatial transformation, and also provide a basis for evaluation of spatial patterns with their qualities and identities afterwards. A structural investigation of urban space at different levels helps to decipher the essence of traditional spatial environment, and also helps to establish a link between spatial identity and the local socio-cultural context of the city.

[4] In the spatial environment of Taiwan, problems are distinctive with respect to the particular socio-cultural context over periods of time which are related to three dimensions of specific situational conflicts, such as the conflict between tradition and modernity, the tension between globalization and locality, and the ideological issue between Chinese and Taiwanese. It seems that these situational conflicts are naturally embedded within the spatial transformation of cities in Taiwan that not only reflected from the changes of people's daily life activities in different periods of development, but also affected the changes of spatial forms and structural patterns in due process.

The conceptual framework of the study, as shown in Figure1.1, was essential to explore the character and identity of a place through a critical reading of spatial transformation over time. In this study, the analysis of the evidence supports the theory as developed. The framework provides a platform for us to have, to paraphrase Tafuri (1976:53), 'a structural vision of the totality' that would let us understand 'a system of orientation instant upon "breaking the relationship of the existing order" in order to recover them at a higher and different level.' The essence of this theoretical framework has two aspects: 1) it provides a social and historically defined scope for the study; 2) it also provides a basis for the evaluation of spatial patterns, i.e., the meaning of changes with respect to quality and identity in spatial configuration in the context of Taipei city rather than a general evaluation of physical forms. In turn, it would suggest a basis for evaluating what a good liveable place should be in future.

1.3 Aims and Objective of the study

This research involves the examination of urban space through the reading of spatial transformation in Taipei. The scope of the study is to explore why and how urban space is transformed over time in the process of urban development. In order to understand this historical conjuncture of spatial transformation, and also to retain our own character and identity with our contemporary place, the cores of the examination are expressed in the following questions:

- What is the underlying structure that ties a specific culture to its physical habitat?
- Are there any cultural constants and variables embedded within the physical forms and spatial organisation of a specific culture?
- To what extent has the mechanism of social change influenced the spatial transformation and affected people's use of contemporary urban space?
- What are the key factors which make an uneven spatial development and initiate spatial transformations of Taipei?

This thesis is primarily concerned with all these questions which would reveal the puzzle behind the spatial transformation of cities and, in turn, suggest ways to encounter the identifiable problems for the future urban design.

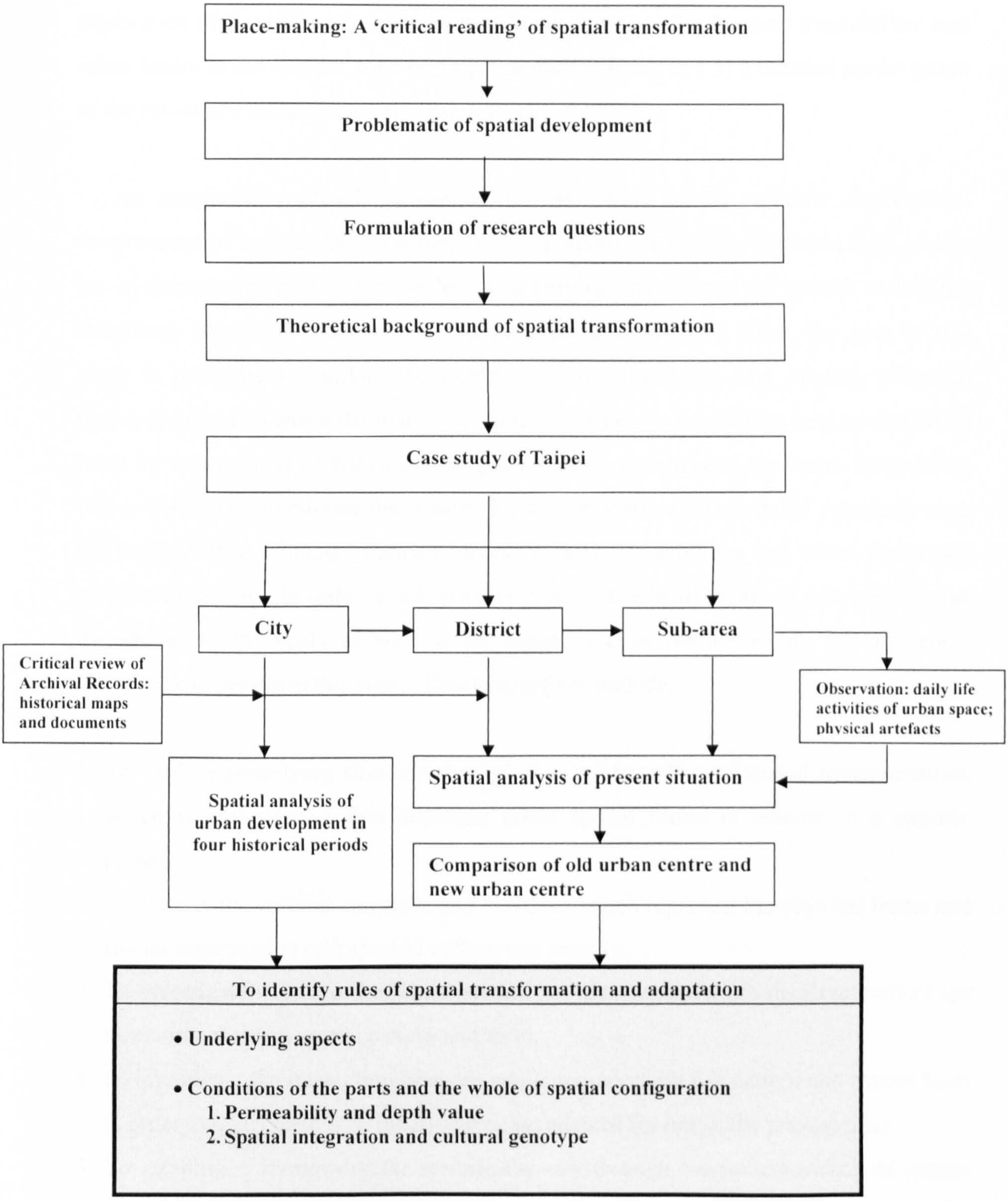

Fig 1.1: Research approach and structure

In order to answer these questions, it is necessary to have a critical reading at three hierarchical levels, i.e., 1) the spatial transformation of the city at macro level, 2) the exploration of the difference between the old city centre in the Western zone and the new urban centre in the Eastern zone of Taipei at district level, and 3) a detailed investigation of the sub-area's urban spaces at a micro level.

An integrated approach is needed for the study of the specific socio-spatial environment of Taiwan. With the help of this integrated approach, empirical facts or data are systematically analysed in order to determine the aspects of spatial underlying structures, functional relationships and everyday life practices. Thus, the goal of this study is primarily to explore the hidden structure, meanings and process of spatial transformation in a particular place over time. The findings would then help to establish a basis for understanding what successful place-making should be in the future. In so doing, it is necessary to investigate the reasons for the transformation of spatial pattern through the reading of any linkage between people's daily life activities and urban forms and patterns of the city. In order to achieve this goal, five objectives are set out to justify the hypotheses of the study as well as for setting a clear outline within the theoretical framework to approach this study. These objectives include:

1. To explore underlying structure through the understanding of spatial transformation, which is embedded within historical urban spatial forms in relation to a specific culture.
2. To identify the cultural constants and variables which represent the physical forms and spatial organisation of a specific culture and locality.
3. To investigate what are the prime cultural features as carriers to decisively affect the formation of urban spatial pattern and form.
4. To investigate the interaction between contemporary daily life pattern and spatial form in order to understand how urban spaces are adapted for use in the present time.
5. To establish a framework for reading the city through the understanding of spatial transformation, from which to reclaim the local character and spatial identity for the present spatial environment of Taipei.

1.4 Limitations and constraints of the research

Because of the nature of this study, the research has encountered limitations and constraints in these major aspects.

1. Lack of sufficient data in some historical built forms

As mentioned in the previous section, the reading of spatial transformation is investigated at three levels. At the city and district level, historical maps are available for spatial analysis but data can only be traced back to 1894, the year before the island seceded from mainland China to become a Japanese colony. It is difficult to analyse the grain scale of historical settlement because there is a lack of detailed information from historical maps. At the micro level of sub-area study, the investigation of cultural urban forms is limited to two spatial elements, i.e., square space and street space because of time constraint in this study. Indeed, future research should study other spatial forms, as there are seven types of historical spatial forms still existing in Taiwan according to the local architectural historian, Lin Heng-tao.[5] Any of these seven historical spatial forms is still a valuable resource for understanding the spatial transformation of the city. However, there are two reasons for choosing these two spatial elements for detailed study. 1) They have more existing rich resources than the other five spatial elements. 2) These two spatial elements are the basic elements which were integrated to form the earliest settlements in Taipei Basin. Besides, their spatial forms also reflect direct and explicit evidence of the socio-cultural activities of the common people in the society.

However, there is a further limitation to the study of these selected cultural urban spatial forms. Although there are rich secondary resources, most traditional physical urban forms have been demolished so it is difficult for us to obtain primary data for verification of the real situation at the time. Even some traditional urban forms which still exist, for example, the temple square of *Ch'ing-Shui Tsu-shih-kung miao* have been transformed from the traditional formal use in ritual ceremony in the past into the present commercial functional space enclosed by a variety of surrounding stalls, though the

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[5] According to Lin, Heng-tao (1963), there are seven types of historical architecture still to be found in Taiwan that can be classified as following: 1. Institutional buildings (government office); 2. Military buildings (city wall, canon tower etc.); 3. Public buildings (family temple, Huei kuan, Suu-Yuan etc); 4. Residential buildings, 5. Shophouse; 6. Religious buildings (folk temples, churches etc.); 7. Others (Pai-lou, cemetery, old streets etc.).

relationship between the spatial settings of the temple and the square is still arranged the same as before. In these circumstances, the representation of present cultural urban forms may possess different meanings in accordance with today's daily life activities. Certainly, these are the difficulties we face understanding the linkage and underlying factors behind the process of spatial transformation.

2. Verification of historical data

The primary data for some of the traditional urban spatial forms cannot be collected from the existing environment, so the verification of the original plans has to be traced back in history using historical archives of secondary resources such as official documents, plans, drawings and newspapers.

1.5 THE CHOICE OF SETTING

1.5.1 Taipei – the capital city of Taiwan

The reason for choosing Taipei as a case study is not only because of the researcher's personal acquaintance with the city for a long period, but it is also due to the city itself having significant individual characteristics in relation to its immensely rich historical and cultural background which are relevant to the nature of this research. Besides, Taipei as the capital city of Taiwan provides rich resources which are valuable for a critical reading of spatial transformation in the history of urban development. The presence of two distinctive urban centres, i.e., the old city centre and the new urban centre of the city provides a base for the study of the specific problematic of spatial development in Taiwan. These issues are the situational phenomena particular to the spatial milieu of Taipei which reflect explicitly the conflict between tradition and modernity, the tension between globalization and locality, and the ideological issue of the quest of a proper culture and identity: Chinese and Taiwanese. It seems that Taipei provides a solid ground for exploring these specific issues to see how they affect the spatial transformation in the history of its urban development. This historical development covers three major periods: the Imperial Ch'ing Dynasty, the Japanese Colonial Period, and the contemporary period before and after 1988, and vividly illustrate a complete story of spatial changes. The case study of Taipei enables us to have a comprehensive picture of spatial change as a whole

and to view critically the transformation of the city's urban structure through a spatio-temporal perspective.

1.5.2 Urban centres: a miniature of living socio-cultural milieu

There are two urban centres in Taipei. One is the old centre in the Western District while the new urban centre is located at the Eastern zone. The formation of these two urban centres is a particular phenomenon which reflects the process of urban development in the history of Taipei Basin and provides a complete story of the growth of socio-spatial environment in Taipei. These two centres are distinguished by their different spatial morphology, although both contain cultural urban forms such as housing, temple space, and street space. Both illustrate different stories of spatial development according to their spatio-temporal development path.

These dual centres also represent two different types of power centre in terms of the functional and political contents which have defined their spatial characters and identity. In such context, they provide a solid basis for us to understand how the roles of these two centres affect the spatial transformation in the history of city development. In general, the old centre in Western District is a representation of traditional and local character while the new modernised centre in the Eastern zone is a product of contemporary urban development as signified by its physical global forms, which are dominated by globalization. A comparative study of both districts can provide an objective view to understand how spatial forms and urban patterns are formed in due process and why they are constructed differently specific to their socio-cultural contexts.

1.5.3 The sub-areas and dominant urban forms: square space and street space

The reasons for choosing two spatial elements in the sub-areas for detailed investigation are twofold. First, they are often regarded as living cultural spaces with rich resources in the historical development of Taipei. Second, they genuinely reflect the daily life experience of common people. Both are always interrelated as a whole in the urban development of historical settlement and provide vivid evidence for their importance to the daily life activities of people in the society. It seems that to have only one of them

would certainly misinterpret the overall picture. The investigation of these two cultural spatial forms can certainly help to reveal the underlying structures or genotypes embedded within the spatial pattern of the city. As a result, it allows us to have a comprehensive picture of what is a good and liveable place by looking at the relationship between urban space and socio-cultural activities, specific to locality. The importance of these spatial forms is described as followings:

- **Temple and square space (*miao and miao-ch'eng*)**

One of the important cultural spatial forms is temple space, i.e. *Miao*, which was often a focus for local community in traditional society. The traditional temple shared people's daily activities with the main street and also acted as a religious centre as well as a political centre in the past. It dominated the spatial organization in the community of the traditional settlement. It is always located at a prominent position in association with the street. It was often used as an instrument to legitimate local power and also as a proper medium for the publicization of a name (Feuchtwang, 1981:53). As in Chinese custom, a particular type of urban space was produced with this social organisation. In general, *miao* and its relationship with the street constitute a *miao-cheng* (literally temple square), which was usually an urban public open space where people gathered and market activities generally took place. A temple in traditional society was a quasi-political centre that symbolises, supports, and reinforces the solidarity of the people united in its worship boundary. It was an index to the settlement. It was a living culture embedded with the social values of the society.

In traditional society, *Miao-Cheng* was a prominent social public space that reflected the concept of the 'public' in the system of cosmology. It acted as a symbolic centre of family clan in the traditional society either for protection from the intrusion of non-family groups or for sharing common assets and collective production (Hsia, 1993:89). It appeared with different shapes based on different functions and different types of worships. As the enclosed open space in front of the *Miao*, *miao-cheng* reassumed most functions of *Miao*; it was a multi-purpose place, the place for ceremonies and communal activities, and even a place for the market as stated before. Religion is here confined to communal, not just to individual worship. The function of the *miao* was manifold: it was

the site of festivals, the classroom of private tutors, the meeting-place of the aged, the dining-room of feasting parties, the court of judicial cases, etc.

In the case of old Taipei, temple space was always located at a central point in the domain of neighbourhood. For example, there were 17 folk religion temples distributed within the areas of 'Three Market Streets' such as old Mengchia (present Wanhua), Tao-to-cheng, and the inner walled city that gave their domain areas clear self-identity. Some of them still preserve such character in the district today. So the investigation of temple space would certainly let us understand the system of spatial settings specific to particular socio-cultural activities in the process of spatial transformation.

- **Street space**

Street space was another important urban spatial element developed in the earliest settlement of Taipei Basin. It was characterized by the dominant functions of commercial activities in articulated with local social daily life pattern in the old days. That is why the earliest settlements in Taipei were known as 'Three Market Streets'. The reason for choosing street space for study has two aspects. First, it provides a detailed description of the historical spatial development of Taipei which conveys images in association with surrounding building type and style, street configuration, public open spaces and people's activities at a particular time. The history of street space is likely to provide a concrete manifestation of Taiwanese values in time and space which explicitly tells a story of spatial transformation in Taipei. Second, the space of street system is always the theatre of everyday life and transactions. It provides an ideal setting for understanding temporal and physical factors that are important in the formation of urban public space in relation to socio-cultural activities in the city. The overlapping of the existing street system with the old street system can provide a good resource for a vivid reading of the spatial transformation of the city. The observation of people's daily life activities in the existing streets can lead to a review of the interaction between spatial forms and patterns of activity in a real sense.

1.6 Organisation of the study

Following the introductory chapter which outlines the research questions of this study, Chapter two is a study of theoretical perspective in relation to spatial development and transformation. It starts with a discussion of the meaning of place-making and definitions of urban development and transformation. There follows a review of the existing approaches to the analysis and understanding of spatial transformation from different disciplines. This chapter attempts to establish a conceptual framework of how to read spatial transformation in order to understand the relationships between urban spatial forms and socio-cultural activities of the city.

In relation to the research questions and the objectives of this study, Chapter three explains how the study is designed and what kind of methodology is adopted for the study. It mentions the nature of this research which leads to a discussion of why a conceptual integrated multiple approach is appropriate for this study. It further describes the employment of both quantitative and qualitative research strategy and fieldwork investigation techniques, such as observation, archival study, note taking and photographic documentation to achieve the collection of data at different levels ranging from macro city level, district level to micro urban quarter level study. Finally, the strategy of analysis in accordance with these three levels is also described to explain how to obtain the validity and reliability of analysis for this study.

Chapter four discusses the spatial transformation of Taipei over time ranging from the Ch'ing Dynasty, the Japanese Colonial Period through to the contemporary period. A systematic spatial analysis at macro-level is carried out to compare the morphology of Taipei city at different stages. It illustrates the experience of spatial change in the urban development of Taipei and explains how the spatial configuration of each period is influenced by the ideology and cultural aspirations of each particular administration. Finally, this chapter attempts to discover the logic behind the formation and patterns of urban spaces and structures in the historical context.

Chapter five and Chapter six describe the spatial transformation of the two districts in the contemporary situation, namely the fourth change in spatial configuration in the post-colonial period (1988 to the present) by reading the urban fabric of the old centre in

the Western District (Wanhua) and the new urban centre in the Eastern zone (Dian). The systematic spatial analyses of both districts in these chapters are discussed with reference to the conceptual framework of this study. These chapters focus on how the patterns of interactions between urban public space and people's daily life activity are expressed in locality, and to see how spatial change and adaptability are performed in the present-state socio-cultural form of space in these districts. Both chapters attempt to explore the underlying structures and genotypes which are embedded within the spatial pattern of the areas, and to identify transformation rules in the formation of urban public space. Finally, the spatial characters and identities of urban spaces embedded within these different districts are also discussed at the end of these chapters.

Chapter seven contains a synthesis and comparative study of the old and new centres of the city based on the results of previous chapters. The purpose is to look at what spatial differences have evolved within these two contrast areas. The discussion points to a shift of spatial paradigm which has occurred during the process of spatial transformation. This chapter further concludes with statements about identity construct, and discovers that there is a common ground of centrality which is clearly expressed in the centre of everyday life upon the reading of spatial transformations of the city.

The final chapter eight is a summary and conclusion of the four main research findings, which include: 1) a difference of basic genotype between the deeper structure of spatial configuration of the old urban centre and the shallow grid pattern of new urban centre. Their different spatial structures reflect individual functional requirement and socio-cultural values between these two areas. 2) The traditional and contemporary quarters differ in their syntactic values which indicate variations in the ordering of spatial configurations and different rules of growth in the city. 3) The prime cultural features of the old and new urban centres are formed as a historical conjuncture of colonial and post-colonial socio-cultural products that are reflected in different types of spatial forms and patterns across the periods. 4) There is a strong correlation between the movement pattern of people and certain occupational uses such as the mixed-use commercial and institutional spaces, which is a consistent spatial element as the most integrated space in the city. Based on the findings, some suggestions for an understanding of the critical future of place-making and reflections for future planning and urban design are made.

CHAPTER TWO: PLACE-MAKING AND SPATIAL TRANSFORMATION --- A THEORETICAL PERSPECTIVE

CONTENTS

Chapter 2: Place-making and transformation: A theoretical perspective

2.1 Prologue

In the previous chapter, I pointed out the problems with the present spatial order and built environment. This is different from the past because the contemporary built environment is often considered as given, synchronic, and uniform, and the society is viewed as being in consensus with the Western model of modernization. In such a context, it raises an argument that the formation of contemporary urban space is a result of a particular situation. This particular situation is caused by a range of tensions within the conflicts of, or readjustment to, the interactions among tradition/modernity, globalization/locality, and Chinese/Taiwanese cultural identity. It is reflected in two sets of phenomena: the socio-cultural and built environment. The phenomena of built environment include the spatial forms and patterns of various kinds based on their uses and significance. The socio-cultural phenomena consist of the social values, thoughts, customs and institutions, and the ways of living and behaviour, which are the raison d'être for the construction of urban public space and built form. These two sets of phenomena interact with each other to give the meanings and identity of a place as a whole. In this regard, understanding the process of place-making requires not only a concern about their reciprocal relationship, but also a reading of the daily life practice of people in the place. This is 'the social logic of space' formulated by Hillier and Hanson (1984) which goes beyond simple spatial development and transformation.

This thesis is primarily aimed at understanding how 'place-making' in this modern global society can be authentically constructed with three primary objectives: conserving the best of the past, looking after present needs, and devising an appropriate future, through the study of urban spatial development and transformation in specific periods of time and local contexts. Based on the central issue of urban development and transformation related to place-making, this chapter is going to study the related theoretical perspectives and approaches to this particular domain and then evaluate which approaches are appropriate for this research. The exploration of these theoretical perspectives can help in the understanding of the specific subjects in the concept of spatial development and transformation on place-making and their relationships with respect to urban centres as well. It provides an insight on the socio-cultural production of space and built forms, and in particular, to an understanding of how they work

for place-making.

This chapter is divided into two major sections. The first section addresses fundamental conceptual ideas about the meanings of place-making imbued closely with the factors of urban public space, built form, values and temporal aspects. Hence, general issues of the character and the nature of urban centres are also examined together with the relationships between urban public space and physical/built form, spatial development and transformation, and the maintenance of conflict value perspectives in modern society. The second section explores some of the conceptual and methodological problems and prospects of some theoretical perspectives involved in the investigation of the process of spatial development and transformation within the city context. The understanding of place-making needs to reconcile theories of action and representation. A cross-disciplinary study shows that there are three classifications with respect to studies of spatial development and transformation, namely, urban space-location, urban-space-form, and urban space-society, from which a tentative conceptual framework is critically formulated, appropriate for the nature of this study.

2.2 The meaning of place-making

To understand the meaning of place-making, we have to explore the mechanisms of place-making and underlying structures, beyond the appearance of physical built form, in specific socio-cultural environment. Inter-related aspects, including tangible elements such as urban public space and built form, and intangible elements such as value system and culture, are associated with these mechanisms and underlying structures. The inversion of built form and urban public space or their figure ground relationship acquires meanings for people who must act within an intangible value system in a specific culture. The importance of this tangible dimension, as Kim Dovey (1999:1) asserts, which represents the place where we live, work and entertain, such as clusters of rooms, buildings, streets and cities, and also reflects everyday life operation of people. The tangible physical dimension not only constructs and frames meanings, but it also reflects the identities, differences, and struggles of gender, class, culture and age. It is a common ground for affiliation with local and historical contexts. Thus, the exploration of urban public space and built form in a particular environment, i.e., the urban centres of Taipei in this research, is necessary to the understanding of place-making in locality.

At the same time, the essence of place-making also needs to be defined from the inside, with a socio-cultural and natural base, in less abstraction and more detail. It is embraced within the intangible value system and cultural dimension. As Lefebvre (1991) and Harvey (1989, 1991) both argue, the meanings of place are often social constructions, which are strongly articulated with the values of the society. In this sense, the idea of 'place-making' cannot be well established without properly questioning the value-laden premises of the society. For example, factors such as *feng-shui,* beliefs, and ideology[6] have obvious influence on the establishment of the value and cultural system in Taiwanese traditional society and give a place with a sense of belonging. These factors are important in an investigation of how they relate to, and perhaps still affect, the present daily life experience of people reflected in their spatial organizations.

In parallel with the above two dimensions, the exploration of temporal dimension enhances the further understanding of the process of transformation specific to a place in a continuity of history. As Clifford and King (1993: 8) argue, place-making is an on-going development and transformation process which is built on layer upon layer of our continuity of history. The statement means that place-making is entrapped in the experience of change, symbolism and significance clinging to seemingly cultural built form specific to locality in a particular time. The stories behind these changes can not be demystified without the revelation of the historical process of urban development and transformation.

Therefore, the examination of urban development and transformation would help to give a whole picture of the spatial character and daily life experience of the city with respect to time change. Place-making is embedded with 'the web of meaning', as we call culture, which integrates place experience with its ideological critique.

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[6] The German philosopher Jürgen Habermas indicates that ideology has characteristics of 'legitimation' phenomenon, which likes venerable customs that are distilled into crystals through generations and integrated with the daily life of a society. In that sense, ideology can also reflect the thoughts of people and dictate the behaviour pattern of a particular group of people in the society. (See Fredric Jameson, 1989, *Postmodernism and cultural theory*, translated in Chinese by Tang, Siu-Bing, Taipei: *Con-Temporary*, p.72)

2.2.1 The concept of urban public space

In the previous chapter, we have discussed the issues of urban development and transformation, which are apparently vaporized and characterized by the historical process in practice with a range of tensions in a particular place. These phenomena raise the question of how this particular place is comprehended and constituted specific to local culture in the process of urban development and transformation. To answer this question, urban public space and built form have to be studied simultaneously. This section aims at a precise understanding of urban public space with reference to Western ideas and traditional Chinese ideas respectively, rather than a broader interpretation of the term 'urban space'. It engages issues relating to the social and cultural production of urban public space, which as Ghani (1993:51) argues, is often regarded as 'a constitutional arena of socio-cultural practices'. It is in this sense that the term 'urban public space' is used in this study, a usage which is broader than that of mere 'physical' urban space. Both 'socio-cultural space' and 'society, culture and space' are used interchangeably with these meanings in mind.

2.2.1.1 Western ideas of urban public space

The original idea of urban public space occurred in the Occidental civilization of ancient Greece. Aristotle manifested the ideas of 'polis', namely city-state, in his book *The Politics* (1985) and it was regarded as the highest form of collective human activity. The word 'polis' implied the dual meanings of civil society and politics. The 'polis' was the centre of civil political life. Because of this civic conscious the development of urban public spaces, like the agora, temples and amphitheatres favouring collective public activities, had organized a coherent spatial structure in ancient Athens and contributed a good quality of life to people. The developments of urban public spaces have been imbued with two meanings. First, urban public space is often regarded as space of collective activities and meanings belonging to people as a whole. It is the physical space expressed as 'space in between' formed by new and existing buildings; public movement systems; and the squares, streets, arcades, parks and open spaces of the quarter (Gosling, 1993:351-2). Second, the quality of urban public space is suggested as being constructed in close association with its daily life, public involvement and socio-cultural roots.

Although the role of urban public space in the present urban development still holds these meanings, the users of urban public space in a complex, modern global society are hardly going to act as a homogeneous mass as in a traditional settlement. The meanings of urban public space in the city are multi-coded according to the values and ideology of the users (M. Gottdiener, 1986:206). David Harvey has mentioned that there are three kinds of space: namely, 'absolute space; relative space; and relational space' (Harvey, 1973:12-14). In analogy, urban public space is not simply a void or container like absolute space, which can separate itself from the occupied object within it and exist independently. Instead, the nature of urban public space contains both relative and relational properties. With regard to relative properties, urban public space is indeed about the relationship of 'specific' things. It is characterized by the relation of the event or in between the dimension of events and is constrained by time in due process. Seemingly, the relational property of urban public space is also reflected from the inside of object. Lefebvre (1991) has argued that it is the 'spatial practice'[7] of people. So the meaning of urban public space is totally determined by whether it includes or performs the interaction with other objects.

Therefore, urban public space should not be only regarded as 'physical space', which is characterized by its morphological form, but it should also be read as "social space", which provides the public with the spatial implications of social interaction, relaxation or passage. It is the social implication which constitutes the way to affect our perceptions, the way to use, and the meanings to elicit. It is an urban form acting as a social 'mirror' which helps to constitute and transform social reality. Gottdiener (1986:214) argues that the concept of urban public space:

> is not a simple container of social processes. It is the condensation of often contentious group interaction which involves signifying practices as much as non-semiotic processes.... This space has a history. It not only signifies some meaning, but also represents the end result of an economic and political process through which one among many meanings and conflicting uses has acquired hegemony.

However, to understand the meanings of urban public space it is necessary to include a concern for the lived experience of history in the process of urban development and

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[7] See Lefebvre, 1991: 38-39. He asserts that 'spatial practice' is the material and functional reproduction of a society, incorporating competence in everyday spatial routines.

transformation. The daily social practice in relation with spatial forms signifies the meanings of place and shapes local constructions of identity. However, community relations cannot prosper and grow without urban public space conducive to social life. Social relations that improve life must take on a material form through 'the social production of space' (ibid., 1986:xiv).

Ghirardo (1996:45) further elaborates the meanings of urban public space in relation to two particular phenomena in the present society. First, the production of urban public space is often dominated by the idea of mass consumption, which usually emphasizes the factor of cost and benefit that determines the form and function of urban public space in nature. Second, most of the newly constructed urban public spaces are subject to the forces of capitalism such as market and corporate control.[8] Actually, these phenomena are increasingly enmeshed in global commodity culture. Giddens (1999) suggests that globalization and modernity have transformed the very tissue of place experience. Thus, the exploration of urban public space needs to take these factors into account for spatial analysis.

In terms of the degree of usage, urban public spaces have two different contexts with respect to their public and private characteristics. Places such as streets and sidewalks, parks, civic squares, monuments, memorial squares, temple squares are often regarded as the familiar patterns of urban spaces to the public. In contrast, the private urban spaces are plazas such as building-front 'public' plazas, the lobbies of buildings, isolated small parks, walkways, and streets for vehicles.

The forms of these urban public spaces are indeed incorporated with globalizing force in the contemporary society. Urban public spaces become more homogeneous in context under the condition of globalization. We need to revalue local places under the regimes of global capitalism which transform our everyday life, and bring a reconfiguration of urban fabric and the constructions of place identity. The concern for place-making needs to understand urban public space in a manner in which urban public space is the locus for collective memory, and the materalization of a history. The way we need to understand urban public space should

[8] See also Jameson, Fredric, 1998, "The Brick and the Balloon: architecture, idealism and land speculation", in *The Culture Turn: Selected Writings on the Postmodern, 1983-1998*, London, New York: Verso, pp.162-189.

follow Derrida's suggestion (1976:24):

> Operating necessarily from the inside, borrowing all the strategic and economic resources of subversion from the old structure, borrowing them structurally.[9]

2.2.1.2 Traditional Chinese thought on urban public space

Traditional Taiwanese society, as characterized by its immigrant culture from Mainland China, provided a different perspective on the concept of urban public space with its 'domestic nature' and Chinese ideology in comparison with the civic consciousness of early Western society (Chen, Chi-Nan, 1998:84). Urban public spaces in traditional Taiwanese society were constructed under two forces. One was related to the power of 'state' such as *kungchia* (literally government institution or agency) instead of 'citizenship' in Western society. The other was possessed with the contextual meaning of 'family clan', which was related to its domestic nature (Hsia, 1993:89). These two forces had become the dominant factors to reflect the traditional ideology and the worldview of cosmology that governed the needs and construction of traditional social urban public spaces. Taking the old Taipei walled city as an example, its spatial context was a representation of these relationships and a symbol of Chinese culture. Confucianism and Taoism basically guided the practices of these forces[10], which determined the spatial structure of the walled city with the assemblies of many symbolic components that addressed the existence of Heaven and helped man to fulfill his role as the cardinal being in the world. The buildings of the four city gates with towers on top of them in the old Taipei walled city was one of the examples. Their orientation to major cardinal direction affirmed their embodiment as the cosmological symbol linking the sky and the earth.

Therefore, the task of understanding urban public spaces in traditional Taiwanese society has to link with the notion of cosmology. According to Yih-Yuan Lee (1995:386), the state of harmony and equilibrium of the cosmology must be achieved by a model of three strata or systems. The three strata are 1. The system of *Tien* (literally heaven) or natural order; 2.The system of *ren* (literally men) or individual organisms; and 3. The system of *shehui* or society.

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[9] Derrida, Jacque, 1976, *Of Grammatology*, Trans. Gayatri Chakravorty Spivak, Baltimore: Johns Hopkins University Press, p.24.

[10] The idea of Confuscianism and Taoism determined the spatial arrangement and the appearance of built form in traditional architecture.

The reciprocal relationships of these three strata are the fundamental forces in the universe that affect the formation of urban public space and the construction of city identity in traditional society.

The articulation of these strata is actually guided by an ultimate reality, namely, '*tao*'.[11] It is the way, the process of the universe, the order of nature and society. In Chinese view, *Tao* is the essence of the universe, and also the cosmic process in which all things are involved. For Laotzu[12] (604-531 B.C.), the principal characteristic of *Tao* is the cyclic nature of its ceaseless motion and change. The universe in Chinese traditional philosophical thinking is a consistent organic system, in balance with human society in its process. This organic view of the cosmos is an organic philosophy, which has inspired ideologies which seem to require a unity of heaven, earth and man in the formation of spatial organisation.

The concern with nature and physical environment was borne in the mind of everyone in traditional Taiwanese societies. Traditionally, the view of the spatial organization of the built environment was not simply something that sat upon the ground to serve as a convenient site for human activity. Instead it was based upon images of an organic view of the cosmos. It was an intervention with nature. In Chinese the term, 'tien-renn-ho-yi' (the unity of *tien* and man) has explicitly expressed this meaning. However, the idea of it is understood not simply as the mediation between nature and man, nor as the underlying rule of them. The concept of unity shows itself in reciprocity. This does not mean the idea abolishes all difference between nature and man, nor is it the synthesis to a higher unity, but the 'symbiotic condition' of the three – nature (*tien*), man and earth. This is the most fundamental principle for perceiving the world from the Chinese point of view.

Firstly, *Tien*, Heaven, is the highest power in this system. 'The idea of Heaven' is always embodied in the spatial organization of the built environment. Secondly, the 'family' in the old Chinese society is considered as an important unit linking individuals with society and the State. The principle set up in the ancient *Four Books*, that state affairs are well managed only

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[11] *Tao* is the philosophy manifested by *Lao Tzu*. Tao stresses spontaneity and harmony with nature. It recognizes both being and non-being as complementary. Non-being defines being as dark outlines light. Being and diversity emanate from non-being.

when families are regulated, clearly reveals the centrality of family functions in the Chinese way of thinking. Such ideas created a society that placed high value on human relationships. In this regard, 'the idea of man' is inseparable from the formation of the built environment in traditional Taiwanese societies. This relationship has been genuinely reflected in traditional space and built forms as will be illustrated in the ensuing chapters.

Moreover, people are considered to be bonded to the earth. The organic view of the cosmos, according to David Nemeth (1987:24), is 'an organic philosophy [which] has inspired ideologies that seem to require a unity of heaven, earth and human [including men and society] in their building schemes'. For instance, these organic views have been embodied through the Taiwanese built environment where people have set up a place of harmony in the universe. Although the idea of the Earth makes people become highly concerned with the geographical and climatic conditions of the region, it by no means implies only purely technical solutions to them. To conform to the regional topography and weather is to be harmonious with Heaven. Heaven, Earth and Man form a harmonious triad for a setting the pattern and structure of urban space.

Paul Wheatley (1971) has pointed out that the geomantic precaution was the first cosmos-magical element in Chinese City planning of the past because Chinese city builders were well aware that the fortune of a city could be assured only if its site was geomantically perfect. This interpretation implied that the perfect setting of urban public space has also followed a fixed cosmic pattern consisting of external oscillation between two poles. These two poles are commonly expressed as Yin and Yang, which supplement and alternate with each other. The binary classification of Yin and Yang could be discussed in various forms as female and male, hell and heaven, earth and sky, rear and front, evil and good, non being and being, private and public negative and positive, etc.

The duality of *Yin* and *Yang*, which constitutes a whole, is the unity in its infinite harmony. Not only each one has a complementary relationship with the other, but both also exist within the other. The essence of either one is always found in its opposite. Their dynamic

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[12] See Wang, Pi, 1979, *Commentary on the Lao-tsu.*

interplay is the principle of natural phenomena and human situations. The idea of unity is expressed not only as a balance in dynamic changes, but also as a complementary in a static relationship. The logic of *Yin* and *Yang* is the basic principle in the traditional Chinese value system. Once they classify any binary set of *Yin-Yang*, they do not simply set it up as a contrast, but go further to ascertain any 'relationship' between the members of the set. The unity is an end as well as beginning. There is no doubt that the concept of 'the unity of *tien* and man' deeply influenced Chinese thinking of the world. This relationship has affected the way space and built form was organized and composed in a situation of harmony. It is also the ideology that applies to almost every realm of socio-cultural activities, as well as to man-nature relations in traditional society.

Therefore, it is necessary to look into the ideology of a socio-cultural unit[13], which is the main mechanism, as Durkheim argues, for 'integration through similarities of belief and group structure' to the formation of mechanical solidarity (Durkheim in Hillier and Hanson, 1984: 18). This would let us understand the process of spatial formation in the context of Taiwanese society.

2.2.1.3 Discussion: Urban public space in contemporary Taiwan's society

In this time-compression cybernetic era, as Menser (1996:293) points out, 'the place itself is inevitably affected and/or permeated (phenomenologically, perceptually, or semiotically) by technological apparati located everywhere. The invasion of technology into the spaces is inevitably and hegemonically progressing.' It illustrates that this new form of 'global mass culture' (Hall, 1991:27), or cyber technology under the regimes of global capitalism has dominated over other regimes in the formation of spatial context by inserting a new definition of identity and new subject position. In fact, this global mass culture 'is not simply an increased "efficiency" of interchange, enabling new avenues of investment, increased productivity at work and new domains of leisure and consumption, but a broad and extensive change in the culture, in the way identities are structured' (Mark Poster, 1995:1). The intervention of global culture has gradually changed the original meanings of most traditional

[13] It is because 'ideology is no more than the social production of meaning. All cultural production manifests the ways in which ideology is produced as part of a given social structure' (See Agrest, 1974:200).

urban public spaces in Taiwan. For example, the traditional temple square space or market street space has been gradually transformed into a new collective spatial experience by the intervention of more global commercial activities. Hwa-Shi Street Tourist Night Market and Lung Shan Temple in Taipei City are the obvious examples. It is a question to rethink what the new role of traditional urban public space should be in this complex global/local reciprocal relationship.

The image of the city seems to float free from the reality of the spatial environment in this global cultural village. The 'globalization and the cybernetic revolution'[14] has transformed our spatial environment into a homogeneous context that deviates from the traditional spatial pattern and character. In this regard, the production of urban public space will become heterogeneous in nature. The meanings of urban public space should be re-thought in such unique situation. Both old and new urban spatial forms should be taken into account along with socio-cultural activities for deeper analytical study.

Besides the influence of global force on spatial transformation, the phenomena of contemporary urban spatial environment in Taiwan have illustrated kinds of kitsch historicism and superficial formalism adopting images from a skin-deep acquaintance with traditional Chinese ideology rather than performing a critical integration with local context. Examples such as Sun Yat-Sun Memorial Hall in the Eastern district and Chiang Kei-Shek Memorial Hall in the Western District are such ideological expressions of typical Chinese symbolic images extended to urban public space which overwhelm the real complex spatial situation in the present society. Although these urban spatial forms try to capture a sense of 'eternity' and 'solemnity' appropriate to the Chinese setting, their forms and spatial organizations are indeed lifeless, as their design has not seriously considered the life experience of people rooted in the locality. As Francoise Choay (1986:160) argues, 'the space of the modern city is "hyposignificant," i.e., poor in spatial significance.'

The question of spatial identity specific to socio-culture in locality often remains unclear if we do not investigate urban public space through a clear understanding of the social logic of space embedded in the society. Hillier and Hanson argue (1984:22) that

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[14] See Jameson, Fredric, 1998, *The Cultural Turn*, p.171.

Space is, in short, everywhere a function of the forms of social solidarity and these are in turn a product of the structure of society. The realization of these differences in systematically different spatial form is because, as Durkheim showed, society has a certain spatial logic and, as we hope we have shown, because space has a certain social logic to it.

2.2.2 The concept of urban built form

The task of reading spatial transformation requires not only the study of urban public space, but also the study of urban built form at the same time. They are interdependent and constitute a reciprocal relationship as solid and void in the construction of city identity. Urban built form is the basis of 'material urban culture' (Gottdiener, 1986:206) that is 'polysemic and possesses more than one socially sustained meaning' in association with people's daily life experience to determine the character and identity of place (ibid., p.213). Therefore, the exploration of such deep nature of built form can demystify the underlying orders of elements which make it possible to understand the functioning of transformation rules. The demystification process can explore a deeper meaning than just reading the surface naturalness of object appearance.

Urban built form is not just a single architectural object free-standing in space; it is a part belonging to a larger whole of the urban fabric. Urban built form is often transformed in the process of urban development by noting that 'the fabric of the city and its texture changes as forms of construction and modes of land use alter over time' (ibid., p.215). In this sense, urban built form as a changing object enables us to see the mechanism of spatial transformation, and reflects itself as unique 'unitary object'[15], which is embedded with distinctive character and continuity of history. The unity of urban built form has the embodiment of 'spatial connectedness' and 'dynamic cohesiveness'[16] that could lead us to identify the spatial character associated with cultural meanings.

Thus, urban built form plays an important role in reflecting the spatial transformation in the

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[15] Hirsch suggests the concept 'unitary object' for understanding the nature of identity. He emphasizes the concept of unity through time because 'there is an experience of motion that spatiotemporal continuity occupies the central role it does as a criterion of identity' (1982:246). Also see Hirsch, E., 1982, *The Concept of Identity*, Oxford: Oxford University Press.

[16] See Hirsch, E., 1982, Op.Cit., pp236-263.

history of urban development. It conveys concretely the identity and the story of changes in place in relation to the daily life experience of people over time. Urban built form can embody an expression of place identity through the implication of two important aspects, namely, the reflection of plane/surface and the interaction/articulation with nature in reality.

The first aspect, plane/surface, is regarded as a boundary, defining inside/outside space which not only creates distinctive identity in buildings, but also defines the space enclosed. The Japanese architect, Tadao Ando, has argued that the concrete surface of a building is the essence to the embodiment of spatial identity which is created by the 'walls made from this concrete surface' and because of the walls, built forms 'become abstract and approach the ultimate limit of space' (Ando in Frampton, 1994:325). In this sense, urban built form may have more sense and meanings in reality because its plane/surface directly interacts with space. The plane/surface, in other words, the façade of building becomes a transitional element to ensure the prestige value of the building, which contributes the foundation of physical identity with concretizing a meaningful space.

Moreover, the 'detail' of surface/plane also solidifies the architectural identity of urban built form. It is seen as the fundamental recognition of the meanings of physical features or objects that makes the determination of the character of a place as being unique. Ando also asserted, 'Detail exists as the most important element in expressing identity. The detail is an element which achieves the physical composition of architecture, but at the same time, it is a generator of an image of architecture' (ibid., p.325). Thus, the 'detail' of plane/surface is also important for us to further understand the distinctive characters and authentic identity of urban built form, and see how the character of detail is embedded with the socio-cultural space.

In addition, according to Norberg-Schulz (1971), the construction of spatial identity needs to return with the interaction/articulation of the second aspect 'nature', which is also important for the recognition of place. The distinctive geological features, for example, rivers, mountains, or water, stone and wood, are often seen as elements in a people's cosmology that reflect the nature per se. Urban built form constructed and interacted with natural elements were always seen in historical settlements or towns. For example, Stonehenge in the United Kingdom and the Great Wall in China manifest themselves in a form of space with memories,

imagery, and cultural activities. In the Chinese context, this is a reflection of *Feng Shui* idea[17] that is still linked to people's life in contemporary Taiwanese society, mediated nature with urban built form that provides people with orientation and meanings in relation to them.

In this sense, the exploration of these aspects helps to realize the transformation of urban built form over time which is important for understanding the character and identity of a place. Beyond its external appearance, the story of changing built form also indicates a connection to the understanding of 'underlying social forces and history' (Gottdiener, 1986: 216), which would help to uncover the underlying structures and genotypes of spatial patterns. Urban built form underlies place experience and place-making at all levels. The significance of analytical operation to urban built form can provide a bridge that would possibly link the meanings of such physical form in relation to social practice in reality.

2.2.3 The concept of value system and culture

The factors behind the formation of urban public space and built form in traditional society might have multifold, but the value system specific to a particular culture was certainly one of the decisive factors determining their formations and changes in the process of development. These values were based on a long tradition of rigidly applied rules and regulations that were, and perhaps still are, linked to their way of life. They reflected socio-cultural practices of people in the spatial organizations.

Values constitute rules and concepts that generate meanings and mechanisms. They are significant in the practice of everyday life in a specific culture. A Taiwanese cultural researcher, Kwan Haw-Shan (1989:29), has argued that the mechanism of values has largely affected the formation/transformation of urban public space and built form. The value system is established on its relation to local custom and institution, which are the reflection of living behaviour and building activities in the society (Fig.2.1). Values reflect the everyday life operations of people that imply the 'beliefs about the meaning of life' and 'conceptions of moral worth' (Al-Naim, 1998:65). In this sense, the daily life experience acts as a bridge to

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[17] See the ensuing section: Values and *feng-shui*.

link the relationship between value and physical environment. In turn, value is produced by a given culture positing in specific social context. It is also seen as an expression of particular ideology in a society.

Clearly, the essence of the value system confined to 'culture' has referred to underlying principles about the daily life experience of people in general and about ways of interpreting specific events in terms of more extensive commitments to particular social arrangements and political orders. These underlying principles signify the spatial significance with the implications of cultural system in the society. From this perspective, it is this cultural system covering all aspects of social life that makes space liveable and becomes important in reality. The following interpretation by Francoise Choay may be taken as an appropriate concluding remark to the view of the inter-relationship between value and culture in space:

> "Spatial significance derives from the fact that space is homologous with a series of cultural systems that are also homologous to each other. Because these systems cover all aspects of social life, they make space 'hyper significant', i.e., richly endowed with symbolization" (Choay, 1986:160).

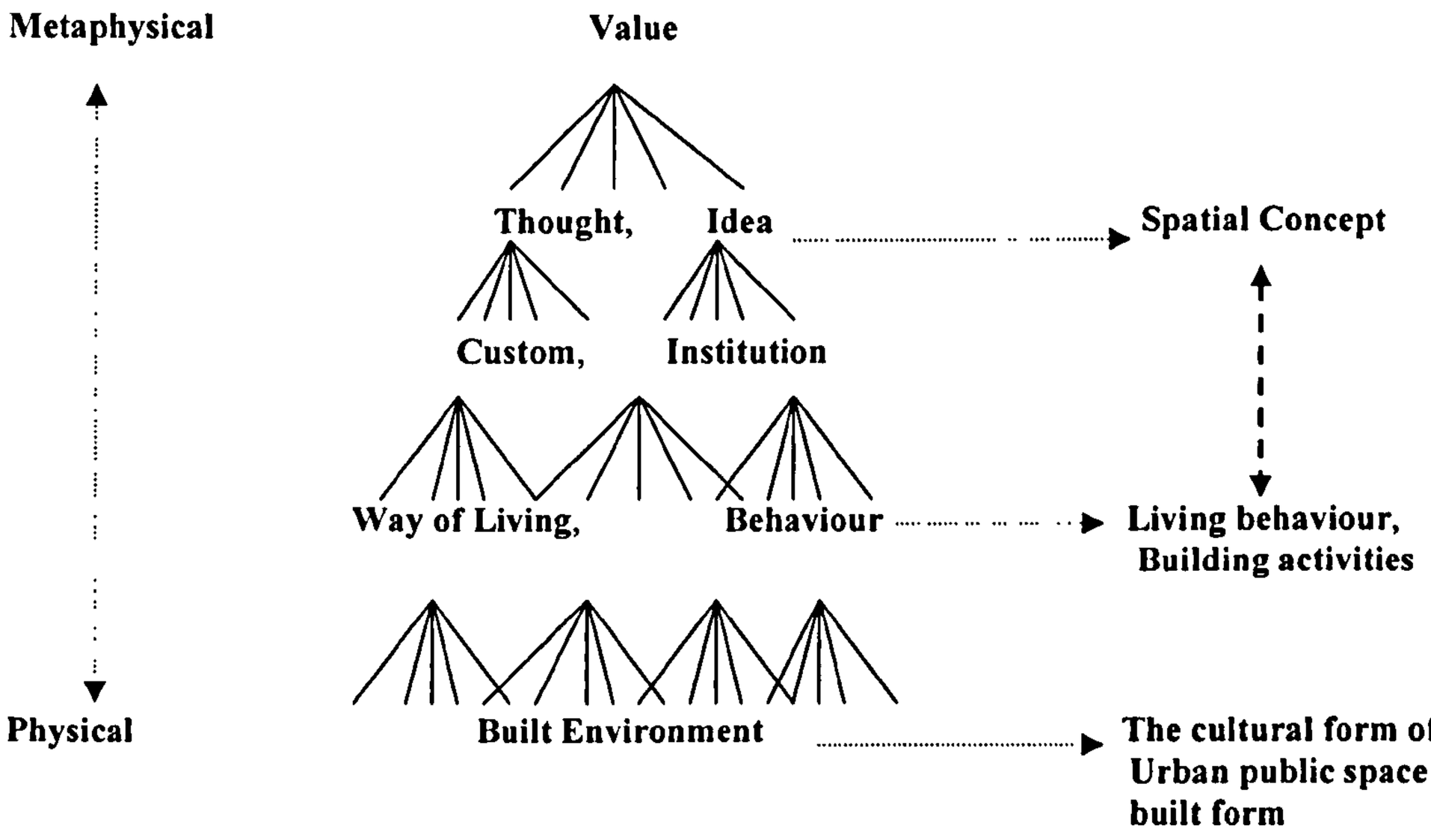

Fig.2.1 The linkage between value and physical environment (Modified from Kwan, 1989:29)

2.2.3.1 Mechanism of values

'Tao' not only is the origin of value, but it is also the origin of the Universe.

(Quote in Yu, Ying-Shi, 1986, p.26)

The values generated in society often carry implications for the environment. In traditional Taiwanese society, the mechanism of values was solidified by the notion of cosmology in relation to the environment. People believed that there was an ultimate reality underlying and unifying the multiple things and events that one observed; they called this reality '*tao*'. This '*tao*' was to guide the urban development and the change of the society, to determine the order of nature and society in the old time. Apart from this perspective, there are also some other points of view. Inglehart (1990:54) suggests that there are two common characteristics to the concept of traditional value system. First, traditional value system 'emphasizes acceptance of inherited status in existing social order'. Second, it has 'obligation to share, give charity'. Values embody ideals of respect, effort or obedience in the inherited status that enable people to evaluate and control their actions. Besides, Ledrut (1986:227) also argues that values in fact 'are qualifications attributed to the object represented owing to its conformity (or non-conformity) with the subject's criteria of satisfaction -- whatever the particular nature of this satisfaction, and therefore of the order of values.' The orders of values are implicitly embedded within the daily life experience of people in the society. They reflect people's beliefs and behaviour patterns in the built environment.

In contemporary society, values are often shifted and changed depending on people's needs. Different concepts of values are generated according to their own concerns and priorities. Some different categories are named such as 'political values, environmental values, consumerist values, and aesthetic-control values', which are used for a variety of purposes in order to determine the ends of the spatial dimensions of the environment.[18] Recently, some scholars have studied the mechanisms behind the implication of values. For example, Ledrut (1986:220) has found in his study that there are four distinguishing dimensions for the signification of values: 'ethical, aesthetic, vital, and functional'. Mol also suggests four mechanisms of values, namely, 'objectification for visualization; commitments for priority

[18] See Redcliff, Michael, 1995:7-18; Clift, Roland (et al.), 1995:19-32; and Porteous, J. Douglas, 1996.

setting; ritual for consolidating identity; and belief system enabling people to recognize meanings in their daily life' (Quoted in Al-Naim, 1998: 65). From their interpretations, it seems that though different terms are used for the values, the meanings are congruent as: ethical as belief system, aesthetic as objectification, vital as commitments, and functional as ritual. These four mechanisms provide the bases for the indication of values, which become significant sources of the determination of urban built form and space.

The attributes of belief system and ritual function are two major underlying mechanisms, which affect a people's way of life and determine the spatial identity and character in the specific cultural milieu of traditional Taiwanese society. These two mechanisms underlie place experience and place-making process at all levels – beliefs about the 'good life', the integration of 'man' and 'nature' in the environment. These are the forms of culture, in the sense of 'inheritance, shared values, and the like, which steps in as the principle of social unity' (Eagleton, 2000: 26). People usually act on the basis of values, which are implicit in what we take for granted from cultural and ideological systems of a society. But the question is whether these two mechanisms are still valid in contemporary society or not. Perhaps they have already become integrated with the daily life of the society. The aim of this research is to look at how the body of shared values and meanings to act with built form and space – the production of built form and space. This is the critical issue in the consideration of culture and built form and urban public space behind place-making.

2.2.3.2 The concept of culture

The previous section has discussed the mechanisms of values having a strong connection to the culture, which is always a major focus for the study of their relationship with built form and urban public space in environmental studies but not specifically in architecture. This section further explains the concept of culture.

Culture is a broad and general term but the concept of culture can be an inclusive term for a particular group of people sharing a body of values and meanings. The meanings of culture have various perspectives. Barnes explains, 'A culture is a set of beliefs and assumptions developed by a given group in its effort to cope with the problems of external

adaptation and internal integration' (Barnes quoted in Inglehart, 1990: 4). Malinowski (1931:621) also argues, 'Culture comprises inherited artefacts, goods, technical processes, ideas, habits, and values.' According to Parsons and Shils (1997: 56), 'culture is a set of communicative symbols; and is also a set of behavior criteria'. Besides, Eagleton (2000:118) also argues that 'culture epitomizes all that conservatism offers in their place: custom, manners, tradition, instinct, and reverence'; or, as Diana Agrest (1974:201) asserts, 'culture is understood to be a system of "social codes" that permits information to enter the public domain by means of appropriate signs. As a whole, culture can be seen as a hierarchy of these codes, manifested through various texts.' In this sense, culture is regarded as a system of attitudes, values, knowledge and social norms, which are widely shared within a society and transmitted from generation to generation. Culture is a thing to be learned and may vary from one society to another. In other words, culture transcends place experience and ideology of a society. It also possesses the nature of particularism and contains the set of values or practices of some part smaller than some whole.

In general, as Parsons and Shils (1997:53-54) assert, cultural systems have four characteristics. First, a cultural system is not constructed by either interactive behaviour or individual action of people. Instead, culture is formed by "value, norm and symbol". These values, norms, and symbols determine people's choice of actions. They also confine the behaviour patterns of each individual between their interactions. Second, cultural system has few empirical characteristics. It exists in a state of 'physical symbols'. Third, the cultural system must reach a certain degree of 'consistency and continuity', and then the embodiment of culture can be achieved through the system of experiential action. Fourth, cultural system is a kind of cultural pattern. Different constituents in this pattern are then integrated to form 'values, beliefs, and the expressive symbolic systems'.

In this regard, culture can be seen as two aspects. On the one hand, culture is regarded as the representation and the reproduction of art-forms, as built form and urban space in this study. On the other hand, culture is also treated as a dominant level of social life that designates not only a system of beliefs to mould a way of life but also the artifacts and product of a people. In other words, culture can be signified as our sentiment of place, nostalgia for tradition, preference for local community, reverence for hierarchy, which is particularly seen as

a part of everyday life embodied in the spatial environment which is the focus for this research.

These concepts have been supported by the works of Amos Rapoport (1969, 1977). Evidences from his works have shown that cultural and social forces often occupy dominant roles in the determination of forms in traditional environment. In this sense, culture and urban built forms are inter-related and it seems that they cannot exist separately. Culture becomes a real thing when it is expressed in the form of urban space which reflects daily life activity of people using this space in reality.

There is another argument of culture in relation to the changing form of environment from one system to another. According to Lewis (1969:227), modernization is associated with migration and the movement of peoples, which 'carries a new culture to a more primitive people so that they may jump one or two phases instead of laboriously meaning each stage for itself.' This concept implies a process of 'acculturation', which Kim (1983:158) explains as the superimposition of one culture over another culture, and the transformation of that culture into a new one, through a process of diffusion. That means culture is more of an adaptive evolutionary system. It seems that a broad cultural shift is formed from tradition to post/modernism in contemporary society which embodies a new type of cultural life. In traditional society, everyday social life adheres strictly to cultural rules and regulations. Culture, as a system of values, is a static and closed system which is fully reflected in everyday life. In present society, culture may be more open and less rigid because it is affected by multiple values in the era of globalization.

Georgette Wang, a professor of intercultural communication in Taiwan, and Wimal Dissanayaka express their view of the cultural phenomena (Wang and Dissanayake, 1984:17-18) as follows:

> In essence, culture is seen as sided with tradition, which is diametrically opposed to modernity. With proper role of culture taken into consideration, tradition and modernity are seen as two aspects of one entity – culture. Through interaction of elements within culture, changes are brought forth while maintaining a certain degree of continuity. .... The old bifurcation of culture and technology, tradition and modernity, and traditionalism and technology should give way to a meaningful synthesis of these elements.

2.2.3.3 Relationship of values and culture to urban built form and space

If the socio-cultural force plays a dominant role in the determination of built form and space, as Rapoport (1977) asserts, then how does it show direct relationship to built form and space, and what are the constituents of this socio-cultural force in the specific environment of Taiwan? According to Hwa-shan Kwan (1989), as shown in previous diagram Figure 2.1, there is a hierarchical linkage between socio-cultural force and built environment. He argues that the linkage is established between the metaphysical and physical elements by the hierarchy of five elements in descending linear orders including: i) value, ii) thought and idea, iii) custom and institution, iv) way of living and behaviour, and v) built environment. In this scheme, thought and idea, custom and institution, and way of living and behaviour are the constituents of culture. In other words, they are the representation of core culture in society. If we look critically into their inter-relationship among these elements, they actually inter-react in a triadic relationship rather than a linear relationship. Figure 2.2 shows how the production of urban built form and space is performed by these inter-relationships in local context. There is a deeper meaning to the operation of this relationship which can be explained by three particular dimensions in the spatial milieu of Taiwan. They can be expressed as: i) *feng-shui* (Chinese ideology), ii) representation of power, and iii) way of living/behaviour.

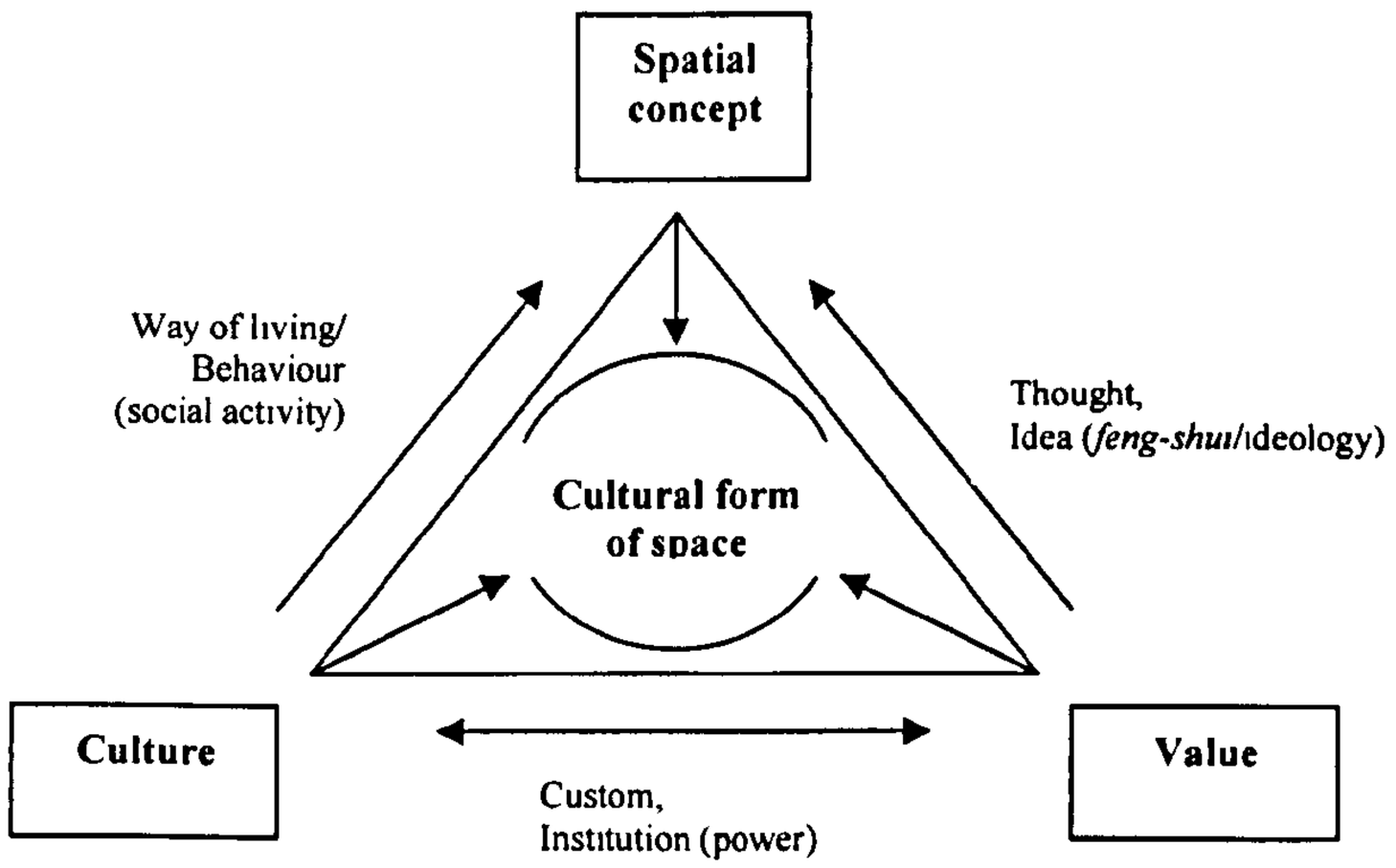

Fig2.2 A triadic relationship in the production of cultural form of space

First of all, *feng-shui* is a traditional ideology and a dominant factor affecting every corner of society in Taiwan. It is often used as the basic principle to organize the spatial setting of urban built forms specific to locality. The ideas of *feng-shui* reflect the daily life of people and integrate living behaviour and building activities with urban space.

Feng-shui bears three significant aspects to the production of built environment from city scale to building scale. First, it determines a computation of the fortunate 'orientation' for a building site (Chiou, 1997:549). The term '*feng-shui*' can be translated literally as '*wind and water*'.[19] The fundamental concept of *feng-shui* can be understood as an extension of human bodiness. The Chinese believe that the vitality of nature and men are the same, both nature and men have 'breath', i.e. *Chi* or strength to stay alive. To ensure endless succession, *Chi* is the most important for all things in the cosmos and constitutes the virtue of a site and is thought to be blown out by wind and held by the water (Freedman 1979, Knapp 1986).

Traditional Chinese cities always adopt the principles of *feng-shui* ideology to determine their ideal orientation. For instance, the ideal city site should face water and be backed by mountains to hold *Chi*. The four sides of a given area are said to be guarded by four mythical creatures: left by an Azure dragon (symbolizing good, peace and power) and right by a white tiger (bad luck, sadness); front by a red phoenix (prosperity, good luck); and rear, a black tortoise (distraction). Cities preferably face to the south and integrate with the existing topography. Obviously it is an organic concept of orientation. Instead of using the objective sense of south, east, north and west to locate a city, the *feng-shui* principles offer the subjective concept of relative orientations like its front, rear, left and right to find the organic relationship with the human. The old Taipei Walled City is an example. Built in the 19th century, it was designed in keeping with *feng-shui* ideology so that its orientation and configuration is in relation to the surrounding topology and the seven stars of the Dipper.

In fact, most of the traditional public spaces and built forms such as dwellings, temples, and streets have considered the relation with *feng-shui* ideology. Some formal principles for

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[19] Feng-shui is also called 'Kan-yu' in the official history *Han su* (literally, The Book of Han), chapter 'The Arts'. Hsu Jeng perceived *kan* as 'Tao of the heaven', and *Yu* as 'Tao of the Earth'. Thus, Kan-yu was used for observing astronomy and examining geography. The term *Feng-shui* dates from Ch'ing Dynasty (265-420).

orientation such as symmetry and axiality are easily seen in the design of traditional building and urban space, where the main front is often open and generally facing a pond, river, or street to hold *Chi*.[20]

Second, *feng-shui* also provides 'symbolic meaning' to the built environment which is regarded as a text for reading of spatial transformation. For example, the 'signifiers' of dragon have various terms such as mountain, water, roof-ridge or road which have different interpretations of 'signified' and change with respect to different time and space (Tsou, 1996). The revelation of this changing relationship indicates the nature of change in *feng-shui*. Indeed, the meaning of this symbolic text is differentiated according to different periods of times and the subjective interpretation of the people which explicates a mainstream of binary relationships between value notion and value judgment, which are implicitly embedded within society.

Third, *feng-shui* also implicitly indicates 'structural meaning' to built form and urban space as it determines the relationship of spatial sequence in site setting and the internal spatial organization of built form itself. For example, the *feng-shui* spot functions as a vertical axis where earth and heaven are connected in the site, while *ming-tang* (literally, the bright court) functions as a man-centred world where most of daily life is conducted. Both the *feng-shui* spot and the *ming-tang* are surrounded in the embrace of mountain ridges standing to their rear and on their flanks. This configuration has indicated the spatial structure, which is directed by the ideology of *feng-shui*. *Feng-shui* principles could reflect underlying structures and forces in association with the social life that generates those characteristic spatial forms.

The second dimension of the triadic relationship in the production of cultural form of space is the representation of 'power', which is a dominant force exerted on the conformation of culture and explicit value in society. In this study, the power over space (such as the representation of political and economic centre) has indicated the significance of changes in urban space and built form in the historical process of urban development in Taiwan.

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[20] Street, in the traditional *feng-shui* principle, is understood as the flow of movement containing *Chi* like a river.

For example, in Ch'ing Dynasty, the traditional settlement in Taiwan was primarily centred around the temple space which was always a sacred and consecrated space, the space of a localized divinity and of a divine locality which became a political centre as well as a social centre to all people of the city. The function and socio-cultural value of this built form was clearly the representation of power to dominate others in a place. However, it was not the same story as the change of power representation in the Japanese colonial period. Values and culture were different under the rule of the Japanese. New urban forms and spatial patterns were introduced in the colonial city. A new power centre was formed that led to the transformation and the changing usage of urban built forms and spaces in the city.

The third dimension of the triad is the life style and social activity, which appear as reality in space and are tied to the genesis of local culture and orientation to use-values. The life pattern shows the history of space and built form in transformation. The study of life style and social activity projects them into a space and built form which substantiates a spatial existence in relation to a social existence. This relation would signify the space and built form to be lived by people in their own particular urban context which can be read in the realm of representations and hence of ideology.

2.3 On Urban Centre : a hub of spatial transformation and paradigm shift

> *All the centres are 'places of action': places where particular activities are carried out, or places of social interaction.* (Norberg-Schulz, 1971:19)

The relationship of value system and culture to built form and urban space has brought a focus to place-making. However, it raises another question which is the more appropriate area for investigating this inter-relationship with reference to the phenomenon of spatial transformation in a particular area: the fringe area or the urban centre of the city? In comparing these two, it is obvious that it is the urban centre, rather than the fringe area, which is the hub of spatial transformation and paradigm shift, and provides a rich narrative in place-making (Hsia, 1993). There are three main conditions which explain why an urban centre as a solid ground is important to this study.

First, an urban centre is a place of power representation. Foucault (1984) argues that space

is fundamental in any form of communal life as well as in any exercise of power. The urban centre in Taipei illustrates Foucault's argument as it is a source of power structure in terms of its multiple roles as political and economical centres. The power representation underlying the centre has played a dominant role in constructing and deconstructing the whole structure of spatial configuration in the historical development of Taipei over long periods of time.

Second, an urban centre is a place of cultural representation. The urban centre is a place to contain the social functions of urban life, the functions of cultural and ideological representations, of work, habitation, recreation, and celebration in relation to the functions of time and regulated use of formed urban spaces and building forms. In this sense, the urban centre is embedded with cultural genotype. The multi-phenomena of the urban centre is a reflection of 'heterotopias'[21] which, as Foucault asserts (1992:421), can provide a common ground for looking at 'the space in which we live, which draws us out of ourselves, in which the erosion of our lives, our time and our history occurs, the space that claws and gnaws at us'. It is also the 'real existing places that are formed in the very founding of society, as part of the presuppositions of social life' (Soja, 1995: 14) that makes it the most important place and the focus of the city with its own distinctive characteristics. From a historical point of view, Gottdiener (1986:288) argues that the urban centre is critically important as 'the organizing mechanism of the urban experience.' In this regard, the urban centre can embody the conceptualization of place-making with the exposure of cultural representation.

Third, an urban centre is a place of structural representation: it is often a place to illustrate a vivid structural change of population in the history. For example, in late Ch'ing Dynasty the total population of old centres including Mengchia and Ta-tao-ch'ing of Taipei was 75,000, but in 1960 the total population of this old centre together with the new centre in Taipei city had

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[21] According to Foucault, heterotopias have six characteristics. 1) Though they assume a wide variety of forms, heterotopias are a constant feature of all cultures. 2) Over the course of its history, a society may take an existing heterotopia and make it function in a different way. 3) The heterotopia has the power of juxtaposing in a single real place different spaces and locations that are incompatible with each other. 4) Heterotopias are linked to time, entering fully into function when traditional time is breached. 5) One does not usually enter a heterotopia by one's own will (think of the prison), and, as a visitor by force or permission, one must perform certain gestures only to be still excluded from its true heart. 6) Heterotopias perform the contradictory functions of revealing the illusory quality of all space and compensating for that illusion with a perfect, meticulous, and well-arranged real space (quoted from Georges Teyssot et al., 1977: 296).

been increased to 1,096,891 people.[22] It had risen by 14.5 times in about 70 years. The increase was due to the influx of new immigrants in two particular periods: the first time was at the beginning of Japanese occupation period from 1895 to 1905; the second influx was brought by the Nationalist government from 1945 to 1955. From this fact, population change in the urban centre indicates a shift of spatial development in the city. The spatial structure of the city changed from period to period with the increase of population and the change of political power over time. Moreover, the urban centre represents a place of dualistic logic between construction and deconstruction in the history of urban development and transformation.

Understanding these conditions makes it clear that an urban centre is usually associated with spatial evolution and transformation. It has a special attachment for people with reference to its cultural continuum, which fixes its people in time and place, and articulates them with the past and the future. Moreover, the urban centre confines the characters of a place with its spatial, customs, ethnic, political, and in particular the daily life experience of people in locality. People perceive a sense of place which often provides a solid image with a clear boundary of a particular district or spatial network. It seems that urban centre possesses such property which provides a strong character to a city and contributes the more salient cues which are easily noticed by people.

2.4 A critical review of theoretical approaches to spatial transformation

The study of various aspects of urban space is concentrated in many disciplines including architecture, urban planning, cultural geography, cultural anthropology, urban sociology, and macro sociology. However, the primacy of the visual in most architectural studies, economy in urban studies and place-study in geography, have largely undermined the significance of 'socio-cultural space' as a central category. In reality, each culture of a society represents a people's strategy for adaptation in response to any changes in socio-spatial environment. Seemingly, urban space is always under constant change and transformation over time. This section attempts to critically review the existing theoretical backgrounds which have dealt with the study of spatial development and transformation. From my review, the study of spatial

[22] Source is from the statistical Abstract of Taipei Municipality, Taipei Municipal government.

development and transformation can be grouped into three theoretical areas. The first body of theories is the study of relations between urban space and location which has focused on the importance of location theory in the urbanization process, as reflected in the urban growth and the spatial arrangement of centrality in the city. The second body of theories is the study of relations between urban space and form which mainly focuses on the forms and patterns of urban space, and provides the explanation of urban development and its changing processes from different perspectives such as urban morphology, phenomenology, socio-semiotics. The third body of theories is the study of the relations between urban space and society which critically argues the important role of social and political change in the spatial construct and transformation.

2.4.1 Studies on Urban Space--Location

The strands of these theoretical studies were developed in the 1950s and 1960s. They primarily looked at the development of cities from the perspectives of environmental and economic determinism. They argued that the urban growth was to be achieved by adopting qualities of the modern world where the city led to a predominant role in inducing social change and progress. Investment should be concentrated in the "centres" of cities and urban areas which would create the conditions for change and modernization. This change would be diffused and spread outwards to peripheral areas (Gottdiener, 1985: 42-45; Alonso, 1964). Friedmann (1987) also argued that the factors of production would be displaced from the periphery to the urban centre where marginal productivity was higher. This effect would then spread to smaller centres in the periphery in order to achieve equilibrium of activity. This would in turn spread growth to poorer areas and achieve socio-economic development. This model suggested a certain pattern of spatial transformation centred round the centre first and then restructured the other parts of the city as a whole afterwards.

The emphasis of location theory in the process of urban development has suggested the concept of economic landscape with its formation determined by the dominant factors of market force and transportation in relation to urban land-values, rents and costs of the city. This approach tends to view 'urban' landscape as a universal spatial phenomenon and the urban system is as a closed system controlled by such factors (Fridemann and Weaver, 1979).

Under this condition, a certain pattern of occupancy and efficient use of land is formed within the city with the assumption that the central area of the city always has the greatest accessibility but this accessibility decreases at the urban peripheries. This perspective has significantly indicated spatial changes in relation to the emergence of efficient land use pattern as a result of various activities in competing for locations with greatest accessibility. It has failed to recognize that there are different regional social economies and different regional political operations. Neither does it realize the relationship between different cultural values and spatial phenomena in the urban communities (Gottdiener, 1985:42).

No doubt, the location factor is very important to the formation of urban space, as Rapoport (1990) has identified the prominence of location which is one of the potential noticeable differences in the environment. Because of this location factor, the environment can be distinguished and experienced with different individual character from centre cities to fringe cities. Places such as nodes, quarters, or districts are modified by size, scale and patterns of spatial development which have to relate to their locations. However, this approach relies heavily on the easily-measured economic benefits of development, which often ignores the factor of aesthetics in the environment (Porteous, 1996:230). Although this approach has made major contributions to our understanding of how politics and economic works in relation to place-making, it tends to underestimate the significance of cultural factors in the study. It is clear that these rational choice models have been helpful in analyzing the relationships between economics and politics, but they seem to ignore culture which has a strong linkage with both politics and economic. There is no question that economic factors are politically important, but they are only part of the story (Inglehart: 1990:15).

In this way the meaning of place is expropriated into the aesthetic mystique of the market, protected from rigorous analysis. The market driven by economics creates an appetite for distinction and therefore for increased turnover in fashion, which manipulates our taste for new images. In a traditional sense, market-driven economy is a part of a process of place destruction, which is only concerned of the cost and benefit rather than taking local culture as important assets for the urban development.

2.4.2 Studies on Urban Space—Form

Apart from the previous approach, some other theoretical perspectives have an inclination to seek out the relation between urban space and form in the understanding of a place and the formation of spatial morphology of a city. Basically, these perspectives rely on physical determinism. One of them is termed as the urban morphological approach which is to study visible forms of the physical environment such as street plan or layout, architectural style or typology of buildings and design, and land use (Rossi, 1982; Lynch, 1981, Norberg-Schulz, 2000). Others examine the forms of urban space in relation to the experience of place such as phenomenological study (Norberg-Schulz, 1971, 1980 & 1988; E. Relph, 1976). The third group has studied urban space to see how it is in relation to the symbolic image of place which transmits meaning and cultural expression such as semiotics (M. Gottdiener & A. Lagopoulos, 1986; Jean Baudrillard, 1983; M. Gottdiener, 1995 & Roland Barthes, 1986). Finally, scholars such as Foucault or Dovey have to rethink space which is fundamental in any exercise of power or treating urban form as a frame to mediate overt expression of power in space (Foucault ,1989; Dovey, 1999). The attitude of these approaches to the study of relations between urban space and forms have provided different analytical strategies that lead to different views on how to address such relations but it seems that the views are mutually exclusive.

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• <u>Urban Morphological Approach</u>

According to David Gosling (1984:17-25), the meaning of the term 'morphology' or 'urban morphology' can be explained as 'the formal expression of the construction types taken individually or as a whole', or 'the study of built form considered from the point of view of its production in relation to the urban structure'. Hanson (2001:06.6) suggests that what, 'morphology has to offer to design is in clarifying the relation between architecture and society.' Thus, the character of a given environment is closely linked to individual or collective built form. Urban form is often regarded as 'urban block system and street system, or the geometrical properties of buildings' (Rowe, 1982; Scruton, 1979: March and Steadman, 1971).

The morphological approach to the study of a city or a settlement entails the understanding of spatial transformation through the evidence of changing urban block and street patterns in history. Such evidence indicates a change of urban texture, order and

hierarchy of urban space. This view is supported by Rob Krier (1979) who has emphasized the importance of the urban block as a key social and physical element in maintaining cohesive city structure. Rossi (1982) also points out that a city is comprised of many distinctive parts with numerous and varied processes of formation and believes that expropriation, demolition and rapid changes in use as a result of speculation and obsolescence are clear signs of urban dynamics. Their arguments suggest that the change of morphological pattern can deliver a clear message of spatial transformation in terms of a hierarchy of spaces, ranging from places of public assembly through to private living in accordance with its architectural composition and its relationship with environment. The characteristic of this approach is that it allows a systematic method of graphical and mathematical analysis of the geometrical patterns of built forms or urban forms. The morphological analysis of the city of Florence from the Roman city to the nineteenth-century city by architect Richard Rogers & Partners was an attempt to examine the morphological change and growth of the city over time. However, the explanation lacked a linkage to social aspects (See Richard Rogers & Partners, 1984: 62-68). It tackled the problems by breaking them into pieces that could be analysed separately, but the discrete solution might not give us a holistic and comprehensive understanding of what the process of the city's spatial transformation is, and of why it is transformed. Instead, the understanding of spatial environment that surrounds man is not based on recognitions of discrete patterns, but on significant totalities.

The use of the morphological approach to examine city form and pattern is also emphasized by the urban design theorist, Christopher Alexander. Alexander attempts to develop a kind of scientific method to systematically study forms and formulate certain kinds of urban patterns that would evolve, as he argues (1977), a reasonable and logical design process in result. In his book, 'Notes on the Synthesis of Form' (1964), he argues that the logical analysis of the design process can be implemented by methods such as operational research or linear programming in order to predict how patterns of built form that are being designed will work. He further indicates that there is a deep and important underlying structural correspondence between the pattern of a problem and the process of designing a physical form which answers that problem. A spatial system can only be stabilized when there are no more 'misfit variables' within the system. His main concern was the inhumanity of the built environment planned and constructed between 1920 and 1960. He argued that the process

of modern architecture failed to generate products that satisfied the true requirements placed upon them by individuals and society, and failed to meet the real demands of real users, and ultimately failed in the basic requirement that design and engineering improve the human condition. His arguments were raised as a result of this historical conjuncture. In order to counter the problem of built environment, Alexander (1987) emphasizes the importance of 'organic growth' for which he suggests there should be 'seven rules'[23]. He asserts the idea of 'piecemeal growth' and the importance of a 'centre in every whole' when looking at the relations between urban space and form. In essence, the growth of the larger whole should be a slow incremental process in which every building increment helps to form at least one larger whole, and the formation of centres is the end result of making things 'whole'. His works are actually the products of the constituents of a particular society, system and historical context.

Other spatial theorists such as March and Steadman (1971) have produced a comprehensive spatial method of analysis which provides a good method of representation for space adjacency. Their method depends on morphological interpretations of the spatial organisation of buildings. Spaces are represented by a set of dots (nodes) and possible movements between spaces are represented by lines. In this method, all internal and external spaces are represented in the graph. The advantage of this spatial approach lies in its ability to manipulate built forms to achieve better fit with physical, functional, and social requirements, which helps to improve the responsiveness of design. However, the concentration on pure geometrical relations of rooms or nodes by such type of spatial process of analysis has faced the criticism that it ignores the significance of the social and cultural meaning in its mode of interpretation.

• <u>Phenomenological approach</u>

The concept of phenomenology can be simply described as the study of experiences of consciousness expressed by Husserl in the phrase, 'back to the things themselves' (Husserl in Bentz and Shapiro, 1998:172). The phenomenological approach in the study of urban space has been extensively adopted in various disciplines over more than three decades. The realms of

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[23] The seven detailed rules of growth are 1) piecemeal growth, 2) the growth of larger wholes, 3) visions, 4) positive urban space, 5) layout of large buildings, 6) construction, and 7) formation of centres. See Alexander, 1987, *A New Theory of Urban Design*, New York: Oxford University Press.

environmental psychology and sociology or geography have contributed their thoughts on man-environment relationship. Works such as *the Psychology of Place* (David Canter: 1977) and *The Power of Place* (John A Agnew and James S Duncan eds.: 1989) are examples of the former while *Placeness and Placelessness* (E. Relph: 1976) and *Space and Place* (Yi-Fu Tuan: 1977) are examples of the latter. Apart from these, architecture has also joined the line of phenomenological production to study the basic features of the settlement forms and the relationships between the moments of use and the place itself (Norberg-Schulz, 1998, 2000).

Using this approach, the understanding of spatial environment can be explored through the existential meanings, which are determined by the structure of our being-in-the-world, (Norberg-Schulz, 1980:6) and through the qualities of things which are intended by 'identification', and the spatial relationship is established by 'orientation' (ibid, 1985:15). These 'identification' and 'orientation' can be well realised in a concrete way as being in a 'place'. In this sense, an essence of a place is a space embedded with character and the existential purpose of building is to make a site become a place. In other words, it is to uncover the meanings potentially present in the environment. And these meanings are imbued within the 'things' which are both abstract and concrete at the same time as reflected by space itself. Space is inherent within characteristics and identities, which are the *raison d'être* for the spirit of place. This approach further emphasizes, as Norberg-Schulz indicates (ibid.,1980:7), the importance of 'nature' to a place's construct as a qualitative, total phenomenon. It takes mythologies, namely, 'cosmogonies and cosmologies', as a point of departure in understanding the basic structures and meanings of spatial environment (Norberg-Schulz, 2000).

Briefly, the phenomenological approach involves a concern for the holistic experiences of 'place' and for the ontology of dwelling, based on a fundamental reassessment of the concept of space. It emphasizes the human experience of the world in everyday life, which is the beginning point for a rigorous understanding of environmental meaning. It explores environmental meaning from human action on, and interaction with, the built environment, but it creates a dilemma since it places too much emphasis on experience which may have certain blindness to take the pronounced effects of social structure and ideology on that experience, and its experiential approach to a place at a particular time is a static analysis which seems to provide little help in understanding the historical process of spatial transformation of a city.

• Socio-semiotics approach

Socio-semiotics approach provides another way to read the city or urban form as 'sign'. It explores the symbolic image of the city or urban form and the symbolic interaction between urban form and material culture (M. Gottdiener, 1995). It emphasizes the perception of urban image received from physical form and appearance. From this image, it embodies a sense of imageability through both encoding and decoding the sign systems, which are responsible for transmitting information within society. In this theoretical base, it is apparent that urban form or spatial environments are perceived as symbols in association with particular social activities. These symbols function as effective media for people to understand the values and meanings of culture which are attached to the physical elements or spatial pattern. It seems that the change of symbolic meanings in association with urban space implies a scenario of spatial modification, which is moulded by people's use of changing patterns of urban space and re-cognition of present spatial images disconnected from the historical continuum. In this sense, spatial transformation is recognized with reference to the change in perceived symbolic meanings. However, the problem of this approach is that it is subjective because the interpretation of 'thing' or 'urban form' is perceived through the eyes. And how the interpretation of symbols be redeployed at another level of signification, as in a sense of recollection with memory from the past, a catharsis in the present, and an inspiration for the future, is needed to acquire an understanding of the spatial transformation of the city.

•Deconstruction approach

The everyday lifeworld, constrained as it may be by ideology, is the locus of human agency, and therefore the point at which the reproduction of social structure may be called into question. Deconstruction as a method, the unpacking of the forms, theories and practices of environmental design can be very useful in this task. Such a deconstruction implies a reconstruction and the locus of human agency; the everyday world of practice is the locus of this construction. It represents an opportunity for the reconciliation of form and process, of urban built form with social context, and for the re-assertion of the dominance of use value over exchange value.

Derrida is critical of any positivistic and pre-determined culture. He rejects any transcendental *a priori*, and any definite, stable, fixed meaning of a word. Derrida advocates

'deconstruction' as the major task of philosophy. In Derrida's usage, 'deconstruction' means to investigate something by unravelling all its elements and parts, until its hidden contradictions and paradoxical qualities appear. Deconstruction renders coherence, continuity, and even history itself suspect. Deconstruction is against any form of legitimacy; it opposes any dominating structure (Norris, 1982).

In elaborating the dynamic concept of 'deconstruction', Derrida relies upon the word 'd*ifferánce*', a French neologism that refers to two meanings: 'to differ' – to be unlike or dissimilar in nature, quality or form on the one hand; and 'to defer'—to delay, to postpone, on the other.[24] The concept '*differánce*' assumes that there is no definite and assignable sense of signifying. It recognises the transgression and disturbance of the system of representation as the principle that is active in praxis. Differance reveals the possibility of both present and absence. Derrida's concept of deconstruction is not 'anti-structure', but he would nevertheless be opposed to any notion of structure that excludes the movement of change and transformation. For him, '*differánce*' is supplementary to structure. Here structure means the irreducible complicity within which one can only 'shape or shift the play of presence and absence' (Derrida, J.1978: 67). Derrida's notions of 'structure' and '*differánce*' thus remain intertwined.

Derrida offers a new insight into a non-totalitarian sense of structure and into dynamic systems, an insight which may help us to understand the other side of cultural order. His inspiration also gives us an alternative view on the production of urban space. In his mind, 'Structure is more than simply form and figure, it involves schematization and perspective. Structure is the formal unity of form and meaning' (Howells, 1999:30). The traditional concept of permanent identity is challenged.

The logic of deconstruction would question all concepts of monolithic cultural identity. Deconstruction posits the 'indecidability' of identity and 'non-identity' (*differánce*). It rejects the synthesis that would conflate non-identity into identity. By placing non-identity on a par with identity, deconstruction clarifies the realm of true identity (Norris, 1982).

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[24] See Derrida, 1986, Chinese translated by Sui, p.21-28

This approach emphasizes 'structure and difference' instead of 'principles' of built form or urban space. This means that one should question 'relationships' and 'developments' among forms and structures. A structure of *differánce* comes to the fore that suggests disintegration, deviation, dislocation, and reveals tendencies, movements, continuities and ruptures as essential features of spatial identity (Wigley, 1988). In this way, cultural identity reflected in urban space is nourished and developed through the process of action and reaction related to societal modernisation. Critical deconstruction offers the possibility of reconstructing these traces of modern cultural identity in urban space.

2.4.3 Studies on Urban Space – Society

These theoretical studies assert that the construction or transformation of urban space is primarily sensitive to the practice of social relations. Spatial changes were provoked by the transformations of population or by changes in the behaviour of people that exercised the space of cities, and the spatial distribution. As Foucault points out (1989:345), 'Space is fundamental in any form of communal life'. The thinking on urban space itself and on urban transformation regarding the growth forms of towns, buildings and spaces should extend far beyond limits of physical aspects in these studies. There are several approaches towards the study of relations between urban space and society, in other words, how urban space is interpreted from the point of view of social context and force.

- Critical political-economic approach

The critical political-economic approach emphasizes that the study of urban space must relate to the concern of society. It suggests the importance of economic and political forces in the changing urban forms and patterns of the city over time. According to Harvey (1972, 1985, and 1989), this approach is characterized by the investigation of three particular areas: a class of analysis of space; the role of space in capital accumulation; and the relationship between the state and space. The central thrust here is that the development process and the production of buildings and related spaces are subject to the same processes as that of any commodity production.

In general, this approach provides a critical view for understanding the development process and the driving force behind spatial transformation. This driving force is linked to the dynamic flow of capital and the political intervention, i.e., the behaviour of spatial structures and the state. From this perspective, the construction of spatial environment of the city is a result of dynamic process in conformity with the underlying historical structures, the forces, and relations of production; but it changes in deformity in accordance with changes in the mode of production and capital accumulation, and has a direct impact on cultural and political life (Harvey, 1989: Ch.16 and Ch.17). From the view of Lefebvre (1991:33), space is a social product. The production of urban space needs to go through 'spatial practice', that is a spatial practice of society through the understanding of material and productive flows across space. The spatial phenomenon is a reflection of the interaction between urban space and these forces in society. This approach may provide interpretations of the production of urban space in the forms of exchange of a particular political-economic event, but it may not address the core of the arguments in this study: the underlying structure of spatial forms and patterns, and the interactions between socio-cultural rules and the use of space in locality.

• Environment – behaviour approach

Environment – behaviour approach is another approach to the study of urban space in relation to social dimension. It focuses on understanding the images, information, impressions, and beliefs that people have of the place and space in relation to specified behavioural patterns (Moore-Golledge, 1976:18). The way of seeing places by this approach is like a filter model to acquire the cultural image and personal image from the real world, as claimed by Rapoport (1977:38), that is characterised by its process, namely culture - world view - values - images/schema - lifestyle - activities. The process reflects how people come to know the environment and how they come to organise their knowledge of the environment. Therefore, the essence of place and space is reflected from the transactions of persons in the environments and the interactions between intra-organismic variables, like values, aspirations, and socio-economic background and external situational demands, like the cognitive demands of environments of different formal properties (Moore, 1976:163).

The study of environmental behaviour in relation to urban space was substantially developed by the rise of environmental psychology research in the 1960's and 1970's, when

extensive research was undertaken into the relationship between the built environment and human behaviour. Such research advocates that the built environment should not be understood solely in terms of physical elements but needs to consider a wider context involving the socio-cultural and behavioural characteristics of the community. A large proportion of this research concentrated on studying the effects of the built environment on human behaviour and well beings.

One of the prominent studies in this approach was illustrated in Jane Jacobs' famous book: *The Death and Life of Great American Cities* (1961). She argued that the failure of contemporary design and planning of built environment was primarily due to its ignorance of the traditional social life of cities. In other words, contemporary urban space was reduced to a lifeless spatial form because there was a lack of consideration of how people use and interact with such space. In another study Newman (1972) illustrated the relationship between high crime rates and high rise residential development in New York. He developed the concept of defensible space, which presented a set of design principles aimed at reducing anti-social behaviour and crime rates. This was based on the manipulation of building and spatial configurations to provide better territorial definition to determine the territorial behaviour of residents and to enable them to survey their territories, thereby reducing crime. Both of these studies argue that the importance of people's behaviour needs to be taken into account in spatial design.

This approach also concentrates primarily on the meaning of spatial and psychological experiences of place. Places are taken to express the immediate experience of the world, defined by physical characteristics and by the focusing of the experience and intention onto a particular setting. According to Relph (1976), place represents an important source of individual and communal identity, as well as a profound human centre where people have deep emotional and psychological ties. He argues that it is important to explore our connections to our surroundings and to see how much they are important to the existence of local cultures.

There is a strong connection between territoriality and social and economic status (Relph, 1976; Newman, 1972). Such a relationship is manifested in the dominance phenomenon, which is expressed through expansion and reassertion where the dominating group may overshadow

other groups. This is displayed in the form of strong defensive and symbolic barriers undermining the neighbourhood groups and restricting interaction and social contacts. The dominated group may resort to psychological means to control their territory through retreat and internal withdrawal. In social terms, this leads to processes promoting a system controlled by the high status dominating group. In turn, the elite group imposes an environmental system conforming to their lifestyle and ideologies for the society.

• Space Syntax on socio-spatial study

Finally, it remains to mention Space Syntax which is a field of study heavily interacting with space and society. The theory has been introduced and developed by Professor Bill Hillier and Juliene Hanson at the Bartlett School of Graduate Studies, University College London over the last two decades (Hillier and Hanson, 1984). It is a set of analytical methods to investigate and better understand spatial configurations of all kinds regarding the relationships between human behaviour and built environment. It is efficient in studying how people's movement patterns interact with the built environment. As a result, it aims to eliminate potential problems stemming from underused and badly planned space and, in turn, to develop and forecast the social and economic success of both public and private spaces in the future development of the city.

The characteristics of this theoretical approach are largely reflected by two aspects, which are 'relationality' and 'configurationality'. First, the concept of relationality is important showing the relation between space and social existence, as indicated by Hillier (1996: 29-38) and allows us to recognise the difference between one kind and another of spatial discursive elements.[25] The recognition of 'relationality' among these discursive elements is important to formulate the logic of spatial order of settlements or places at one hand. On the other hand, the identification of the non-discursive relational schemes can structure their characteristic forms and convert our milieu from materiality to culture[26]. As indicated by Hillier (1989:6) human societies order their spatial milieu in order to construct a spatial culture. Hillier (1996:33-35)

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[25] Discursive elements are the elements which we can see them, name them and know how to talk about, such as shape, area, density, plans sections, or forms etc. (Hillier, 1996)

[26] The fundamental condition of our cultural existence is interdependence of discursive elements and non-discursive ideas.

describes 'configurationality' as complexes of interdependent relations with two critical properties: the configuration is different when seen from different points of view within it; when a part of the configuration changes, whether element or relation, the whole can change. The configurational changes of this kind play a vital role in the form and functioning of buildings and built environments.

Moreover, according to Hillier and Hanson Space Syntax involves the following four stages of thinking about space (Space Syntax Laboratory, 1999:2):

1. Identifying spatial elements in certain types of spatial complex such as streets and squares in urban areas, or the open space system of a settlement, it is less obviously a space than in simple houses in which it may be reasonable to see each room as a spatial element. Space syntax proposes a number of ways of breaking up space into elements. This stage of space syntax is the stage of representation.
2. Analyzing the configurational relations amongst the spatial elements means considering the complex of spatial relations as a graph and analyzing the interrelationships amongst the spaces by treating them as elements (or nodes) of a graph. This is the stage of analysis.
3. Identifying common patterns such as those often found in the neighbourhoods or vernacular houses of different cultures, or different types of urban pattern. This is the genotype phase.
4. Identifying the common themes across different cultural genotypes and in this way building a cross-cultural comparative analysis of spatial configuration and its relation to culture and social behaviour. This is the theory stage.

In general, this method can express the configurational properties in a consistent and rigorous way by means of graphical representations and quantitative analysis through computer modelling, so that the hidden structure in the socio-spatial organisation can be explored and detected in a more rational and precise sense. The results may tell the order of spatial organization or the structural properties of the whole; however, they are still fragmentary. To know how the properties are formed and changed over time one needs to work at a historical and sociological level as a complementary effort to complete the whole story.

2.4 Conclusion

This chapter has discussed the meaning of place-making by reviewing the concepts of urban public space, built form, value system and cultural dimensions. It further discussed the relationships of values and culture to urban space and built form to explain why and how they are important to place-making. Understanding these concepts and their inter-relationships has helped to establish a conceptual framework for the study. A critical review of different existing theoretical approaches has shown their contributions to the studies of built environment and people, although they have not fully encountered the issue of place-making in relation to the perspective of spatial development and transformation. Regarding their philosophies, subject concerns and points of views on space and culture, they can be grouped into three main areas: urban space-location, urban space-form, and urban space-society. The reviews of these approaches have examined the strengths and weaknesses of their methodological positions in relation to the central theme of this study, and demonstrated that there is no single methodological position or school of thought which is appropriate to the particular theme of this research.

For example, urban morphological study, which is regarded as the positivist approach, is criticized in that the totality or the nature is often deconstructed into pieces for analysis. The result of the analysis is then fitted into the whole epistemology through an abstract and logical approach. However, the 'thing' here, as urban space and built form, appears for understanding not as the 'thing' in its original condition of totality. Instead, it only exists as supposive phenomenon. It can only understand the main structural 'order' of the thing but it cannot comprehend the nature of the thing in its total condition. On the contrary, the phenomenological approach may have a holistic experience of place that drives the interpretation of meanings from the phenomena of interaction between human and built environment. However, its weaknesses is to take the pronounced effects of social structure and ideology on that experience, and cannot fully understand the underlying order of urban space from external spatial phenomena.

Obviously, the phenomenon of interpretive 'meaning' is a universal problem, not only from the phenomenological approach. It is the same in the socio-semiotics and the

deconstruction approach as well, because there is always a difference between interpretive meaning and reality. A balancing act is required to adjust this condition in order to comprehend and restore the truth of the urban history of spatial construct and transformation. Thus, we have to bear in mind that the work is not only for the description of an historic phenomenon, but it is necessary to further explore the 'hidden thing' underlying the phenomenon.

In reality, the meaning of an environmental object consists in its relations to other objects in a system; that is, to its own components in its inner organization, and to the context of which it is itself a part of the whole. Built form conveys information. A total lack of articulation will result in banality, but an exaggerated articulation will end in chaos. A form must generalize; it must overlook certain shades of difference in order to grasp fundamental similarity. Meaning presupposes the repetition of a limited number of elements and relations, which, however, allow all the combinations necessary for the important situations in life and culture. Hillier and Hanson (1984:148) have said, 'buildings are not just objects, but transformations of space through objects because space has its own laws and its own logic; it can act as a system of constraints on the society .... It can answer back. It does not obey some set of social determinants without imposing some of its own autonomous reality.' The argument here rests on the belief that social and cultural information resides in the physical form and structure of related spaces. Therefore, we need to capture the forces that form our society, and then understand how urban forms are given by these forces.

A critical examination of these existing approaches in relation to the nature and research questions of this study concludes that an integrated theoretical framework with a pluralistic approach seems to be more appropriate for an in-depth investigation to achieve the objectives of this study. For instance, several theoretical approaches are adopted including location and urban morphological theories in association with the concepts of deconstruction and Space Syntax for this study. This integrated theoretical framework can suggest a way to read effectively the spatial transformation of the city and hopefully bring the discussion of space and culture to focus on people in this research. It can effectively reveal an underlying structure of spatial form in relation to the daily life experience of people in a particular time and place, and can help to identify the common themes across different cultural genotypes of traditional urban space in the old urban centre and modern urban space in the new urban centre.

In this way, an integrated theoretical framework can build a cross cultural comparative analysis of spatial configuration and its relation to everyday life in urban form and the cultural meaning of urban form --- and that is the *raison d'ětre* of place-making.

CHAPTER THREE: RESEARCH METHODOLOGY

CONTENTS

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Prologue

In the previous chapter, a theoretical framework was suggested for analyzing how urban space was transformed in the development of the city with regards to the research questions. This chapter will focus on drawing a broad research strategy as to how to address these research questions and achieve the objectives of this study. An integrated approach for this study is designed with the ultimate aim of providing an objective, non-intuitive way to evaluate spatial forms and patterns once occurred in the spatial transformation, to explore the mechanisms on the evolution of spatial structure of the city. It opens up a critical way of understanding the spatial environment and the application of rational inquiry[27] to spatial design. It discusses why an integrated quantitative and qualitative research strategy is suitable for this study and explains why a case study of Taipei is important as a research design for examining the spatial transformation. Then it delivers a case study design on how to investigate the underlying structure of spatial pattern in the historical development of the city, and finally, explains how and what data are collected, and how they are analysed for the case study.

3.2 On the nature of the research

The nature of this research is confined by its subject concern of how to read spatial transformation in order to explore two dimensions: the underlying structure and cultural variables which determine the construction of spatial forms and patterns in the historical process of urban development. Because of this nature, demystifying the underlying aspects of a place in association with its socio-cultural meaning is important to place-making in the future spatial design. This demystification needs to investigate two dimensions, namely spatial structure and spatial meaning, by applying an integrated synchronic and diachronic analytical approach. As things cannot be just taken at face value one has to rely more on its inner nature to reflect its character and genuine identity, these two dimensions are likely to address the

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[27] Inquiry may mean, according to Shapiro (1998: 171), 'A sustained investigation involving careful reflection, the purpose of which is to disclose truth. Truth may be reached when one has made a sincere, self-critical, and socially verifiable attempt to understand or explain a phenomenon. Truth is always partial and temporary, as fuller disclosures may lead to deeper understanding.'

properties of spatial configurations' character and identity. They would help to obtain a holistic view of interactions between 'diachronical' spatial patterns and 'synchronical' socio-cultural activities (Hillier and Hanson, 1984: 92-93), which are the reasons for the spatial transformation and for the formation of ultimate urban forms and patterns in the end. They include objective structures and organizations of urban spaces, and also interpretations or meanings captured in such spaces. Spatial structure will be examined as to how it is related to socio-cultural mechanisms developed in a specific milieu. Spatial meaning is concerned about the links between people and space. The outcome is a specifically cultural knowledge of place-making, rather than a general universal attribute of spatial transformation phenomenon.

In order to achieve the objective of this research, namely a detailed description of the complex interactions between the changing structure of social life pattern and the transformation of urban space over time, the study will make a diachronic examination of these two aspects at different stages of historical development of the city. This exploration will enable us to understand (1) the formation, construction, contents and meanings of urban space in the past, (2) the transformation, deconstruction, contents and meanings of urban space at present, and (3) the underlying structure and order of spatial pattern in relation to the social pattern of the city. Through historical conjecture, the present moment of spatial forms and patterns can be understood by capturing the shift of spatial paradigm in historical context, and using it as a basis for analyzing the spatial characteristics and identities of both the centre and the edge of the city. The nature of their 'reality' would uncover the deeper meanings of their inter-spatial relationships in the process of historical development of the city.

3.3 An integrated multiple approach

Because of the nature of this study, it avoids the use of a conventional positivist approach[28]. As for the ontological position, the positivist approach is rooted in a 'realist' belief that reality exists out there. Values and other biasing and confounding factors are excluded from influencing the outcomes as the researcher is to view events from the outside while conducting research. Knowledge of these outcomes is normally produced in the form of 'time- and context-free' generalization (Guba, 1990:20; Bryman, 1984). In this sense, findings

[28] See also Bentz and Shapiro (1998: 177-185) for some key ideas of Positivism.

would not be related to historical context and cultural meaning by such an approach which seems not to be totally appropriate for this study. In fact, the choice of a research design is based on the type of research questions. This study aims to understand the spatial transformation and the underlying structure of urban space. It argues that we need to analyse the interactive relations between the spatial configuration and activity patterns such as occupational uses and movement patterns in the process of spatial transformation. Analysis of these relations leads us to employ an integrated multiple approach[29] which is more relevant to critically review evidence of changing spatial forms and patterns in the historical development of urban space in specific social context. Such an approach can ensure that the 'findings' of this study are based on as many different sources as possible and makes it less likely to lead to distorted interpretations.

In doing so, the approach will employ both qualitative and quantitative research strategies that allow the researcher to decipher both in depth and in detail issues of the spatial construct in the process of transformation. For its epistemological position, this integrated critical approach can overcome the problems of uncertainty and complementarity by conducting research with a modified objectivity. It sets up a balance between 'precision' and 'richness' for the study (Guba, 1990:21). In the sense of precision, quantitative method here would provide a more reliable representational technique for conducting the morphological analysis that prescribes a more objective interpretation of the deep structure of spatial configuration.[30] It analyses various variables such as genders, age groups in relation to the values of global integration, local integration, connectivity and depth structure of the urban setting[31] that would give a clear perspective of a set of correlations to deliver precise meanings for the structural representation and intelligibility of urban space environment. Their interpretive meanings would be complemented by using the statistical method[32] to conduct the tests of identifying the correlations between these variables by simple regression model and

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[29] This approach is the appropriate methodology for this study that offers a reflective and deeper analysis of the kinds of knowledge desired and the nature of knowledge claims that can be made according to the procedures followed.

[30] This interpretation would act as the 'type' that demonstrates itself as 'a bridge to unite the particularity of meaning with the sociality of interpretation' (See Hirsch, E.D., 1967, *Validity in Interpretation*, New Haven: Yale University Press).

[31] Global and local integration, connectivity, and depth are the syntactic properties of Space Syntax theory which will be explained in Section 3.6.2.

[32] The statistical study is used SPSS 10 software for analysis.

cross tabulation. The quantitative analysis has set up the platform of objective knowledge[33] to make prediction and control over the spatial constructs and activities of the city in the future.

But the quantitative method alone is not satisfactory for this particular study because it does not present a rich description of the shaping of the spatial structure in local context. It also raises a question of 'applicability' as the pressure to predict and control places great emphasis on the statement of 'generalizability' which is incommensurable with locality and specificity and seems often not to fit and work in local contexts (Guba, 1990:22). Moreover, Bryman (1984:82) criticizes the quantitative method as 'the quest for directly observable quantitative indictors and abstract causal relationships among them which are imposed upon an unsuspecting social reality neither captures the underlying phenomena in their full complexity nor facilitates an understanding of their contextual significance.' Thus, this imbalance is redressed for this study by necessarily including qualitative method, which is in its epistemological position known as ethnographic, phenomenological, or case study methods (Guba, 1990; Black, 1999). In this case, the case study method is relevant and complementary to this study in order to address the issues of the spatial transformation in locality. In contrast with quantitative method, the qualitative method can redeem a humanistic approach for the study that can mediate the contextual description of social phenomenon in locality. This contextual description creates a clearing that lets us understand reality. Besides, the techniques used by the qualitative method are more 'sensitive to the complexities of social phenomena' (Bryman, 1984). Under this condition, the validity of complete interpretation reflects the situation of spatial construct in the process of transformation. In terms of the methodological and epistemological positions, the research approach includes the qualitative method for addressing social life activities in relation to the quantitative outcomes of morphological analysis, thus making this integrated analytical platform strong and positive. It will make a significant contribution to urban design in terms of easy-to-follow procedural arguments and standards for decision makers.

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[33] See Popper, K., 1971, *Objective Knowledge*, London; Oxford University Press, for the meaning and interpretation of objective knowledge.

3.4 On Case study

According to Yin (1989:46-49), the rationale of a case-study approach conforms to the critical testing of existing theories, and also provides the inquirer with an opportunity to observe spatial and socio-cultural phenomena with in-depth analysis. An intensive single case study represents a critical analysis in testing a well-formulated theory on activity systems and patterns of space usage in urban-built form, and is justified as an appropriate method for this research. Case study, as Black (1999: 47-48) asserts, allows the researcher the opportunity to pursue issues in greater depth in more realistic situations. It is characterized by its high exploratory nature that may give a generative insight with explanatory descriptions, and encourages greater depth of study of chains of events. In this sense, the case-study approach can lead us to understand the real situation of built form which is a living history of cultural meanings and intentions. It is also flexible enough to allow various techniques of examination, as Yin indicates (1989), such as surveys, analysis of documents and records, interviews, observations, and various analysis techniques to be employed at the same time. Another important point of the application of case study in this case is that it delivers an in-depth analysis of the details of sequences of dates and events of historical transformation of urban forms and patterns which are crucial to determining influences and possible derivation for the construction of everyday spatial environment.

In this study, the choice of Taipei as a case study is made for two reasons. First, being an historical city and the capital city of Taiwan, it has a long history of urban development for over four hundred years that would give a clear picture of how urban centre has been transformed over time. Second, it consists of an old city centre and a new urban centre that has experienced the shift of spatial centre over time, and it has been the object of many studies in the past which ensures the availability of data resources and background information necessary for this research. The focus on these two different characters of urban centres is a critical way to explore the specific influences that may have been at play in the transformation of their urban plans.

3.4.1 The Design of the Study

The design of the study has to relate to the research questions and the objectives of this study. In so doing, three different levels of investigation are designed for the case study of Taipei. The first is the study at city scale level as a whole that would focus the experience of change in the spatial development of Taipei through the in-depth analysis of different stages of urban transformation in history. The second is the study at district scale level, in particular to explore the dual centres of Taipei, namely the old city centre (Wanhua area) of Taipei in Western District and the new urban centre (Dian area) in Eastern District. Both centres contain their own distinctive socio-spatial milieus which reflect different spatial characters and identity. The third is the study at micro-level of urban quarters to see how present urban space interacts with daily life activities of people, and to see what the relation is between the spatial system of activities and the urban structure itself. A longitudinal analysis of this approach would ensure a holistic view of how and why urban space is continuously undergoing transformation over periods of time, and would unravel possible abstractions of underlying structures, systems and rules behind apparent manifestations of spatial configurations.

3.4.2 The Investigation Strategy

According to the research questions and the subject concerns of this study, different research techniques were employed to investigate different levels of the spatial context, namely to examine the urban form of the city associated with its social and cultural aspects from macro-level to micro-level. Fieldwork, in-depth archival studies, literature review, and informal interview with local people were used to obtain diverse sources of information and reliable data.

- **Fieldwork**

The fieldwork was conducted between June 1998 and March 2002. A systematic field study of the city as well as two urban centres of Taipei was carried out. Observation of human interactions with cultural built form of space was the main target in the survey study. The purpose of field study was to collect factual data in order to enable further detailed analysis of the inter-relationship between socio-cultural patterns and urban space in the locality. The methods adopted in the fieldwork at different periods were summarised as in Table 3.1.

- **Observation Technique**

According to Bechtel and Zeisel (1987), there are four categories of observer: a naïve observer, a participant observer, a hidden observer and a professional observer. In this study, a participant observation[34] was applied to observe the specified elements and features defined by the researcher as relating to the subject matter of this study. It is appropriate to this study because the study requires an examination of complex social relationships or intricate patterns of interaction, and first-hand behavioural information on the usage of urban space (Bryman, 1984). Moreover, the observation-based technique is important for this case study. Black (1999:235) points out, this technique is potentially more valid for determining the existence of specific attitudes, belief or values because the data is collected in the context of real activity. Thus, observing social behaviour and activity patterns of people has helped to explain interactions between socio-cultural activity patterns and urban built forms in this local spatial milieu. In this case, it also helped to discover the link between places of activity within the urban spatial matrix that imply potential flows of people, goods and information which construct urban centrality. In addition with the help of video recording, photographic documentation and informal interviews with local people, usage of space was accurately identified and recorded in both areas of Eastern District and Western District. It would enable us to have a comprehensive understanding of socio-cultural patterns and customs in the locality of these two urban centres.

[34] The characteristic of participant observation is that it facilitates an inside view from the point of view of the inquirer (See Bryman, 1984: 78). Clearly, 'participant observation also includes conversation and involvement, rather than simply "invisible" observation' (See Highmore, 2002:102).

Environment	Methods	Objectives	Findings
City (1999,2001,2002)	Observations	To find out the elements with local characteristics and identity. To clarify the district area's boundary for investigation.	The correlation between people's movement pattern and occupational uses The characteristics and identity of traditional and contemporary quarters in the city The prime cultural features of the old and new quarters The underlying structures and genotypes of spatial forms and patterns
	Archival studies: Collection of documents and maps from municipal and service agencies	To find out how and why urban space was transformed. To clarify the stages of change.	
District: **Western (old)** **Eastern (new)** **(1999, 2001, 2002)**	Observations Video recording and photographic documentation	To compare the old and new urban centres To distinguish the physical and spatial characteristics of both districts	
Urban Quarters (1999, 2002)	Observations of interactions: Gate observation of movement patterns by space syntax method Survey of space usage (occupational uses) Informal interview with local people Photographic documentation and note taking of spatial activities	To find out the activity pattern relationship between various social groups (age and gender) and different types of spatial forms (such as streets, squares, and other public urban spaces). To identify the core socio-morphological elements of the area.	

Table 3.1: Methods adopted in the fieldwork

- **In-depth observations of everyday life practice**

In order to understand how people interact with the present-state of urban forms and patterns after the shift of spatial centrality which has appeared in the process of transformation over time, we have to look at the interaction between daily life practice and occupational uses of urban spatial forms in the context of current urban environment. In this case, spatial activity along street space was selected for detailed observation of everyday life practice. The selected examples of street spaces in urban quarters of both districts have illustrated the culture of everyday social life with reference to the existing spatial and social conditions. The observation of social movement patterns between different genders and age groups in relation to street space has provided evidence of basic measurement for the quality of the urban spatial environment and evidence depicting how people interact with present urban public space in reality.

The in-depth observations were conducted in two separate occasions with respect to urban quarters of different districts. The first one was Hsimenting quarter which is located in the Western district. The second one was Dinghou area[35] which is located in the Eastern district. Observations of both quarters were conducted on several periods between May 1999 and March 2002. Nineteen observational gates were designated for Hsimenting quarter (see Figure 5.35) while twenty-four observational gates were assigned for Dinghou quarter (see Figure 6.20) for detailed observation of the relationship between existing pedestrian activity pattern and spatial form and pattern. In this study, each gate was observed in total for about 12.5 minutes, spread during five different periods from 8:00 ~ 10:00a.m., 10:00 a.m. ~ 12:00 noon, 12:00 noon ~ 2:00 p.m., 2:00 ~ 4:00 p.m. to 4:00~ 6:00 p.m.[36] The data obtained was of a very high quality in these designated different periods of observation.

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[35] Dinghou Commercial District, cantered on the Sogo Department Store, is a hub for the materialistic over twenty-five population segments. All around the area is distinctive by its up-scale shopping, dining, and night time entertainment establishments.

[36] According to Hillier (1999), if there are reasonable numbers of people to be observed, then short periods of observation can be sufficient to obtain high quality data.

3.5 On Data Collection

The data for this study was collected from multiple resources including archival records and documents, publications of relevant official data, drawings and plans from municipal government, informal interview, observation, field notes and photographic documentation. Data collection was from two major sources. The primary data was procured mainly from personal experience of the locality, and direct observation during fieldwork in Taipei, while the secondary resource was collected from existing archives of information such as official documentary data, historical maps, publications and newspapers relevant to the study subject and areas. Data from these multiple resources were obtained in accordance with three levels of investigation: macro city scale, district scale, and micro urban quarter scale that were likely to maximize the validity and reliability of the study

- **Primary sources:**

In this study, primary sources were collected with an aim of identifying the characteristics of present spatial elements and human activities in the urban centres of the city which define their character and identity. Techniques for obtaining this primary data used different sources such as informal dialogue with local people for their opinions about the identity of the place, where they live and the socio-cultural features of the areas, physical survey of built forms and usage of spaces; and professional observations of movement patterns taken by notes, photographs and videos of the study areas during fieldwork in Taipei.

- **Secondary sources:**

The use of secondary sources played the most important role in obtaining data for further spatial analysis in this study. They included documents, reports, literatures, historical maps and plans, archival records, and historical information from newspapers as summarised in the following section. Data from secondary sources could help the study to critically review how urban space of the city was transformed over time and to establish a link between the past and the present situation of spatial environment in Taipei. They were also essential to supplement the primary sources for the study of spatial transformation on revealing the relations between morphological and spatial aspects on one side and economic and social aspects on the other.

Documentary sources: historical city maps and plans

Historical maps and city plans of Taipei were collected from the Ch'ing Dynasty, the Japanese colonial period to the present time. The following principal plans/maps were used for further spatial analysis and review:

YEAR	PLANS/MAPS	YEAR	PLANS/MAPS
1895	Taipei Three Market Street City Plan	1956	Taipei Urban Land Use Plan
1900	Taipei Inner City Urban Plan (1/10000)	1975	Taipei Urban Land Use Plan
1925	Map of Taipei Street Plan	1998	Taipei Survey Plan (1/1000) & (1/7000)
1945	Map of Taipei Street Plan		

Sources of these maps are obtained from:

- Hwang, Wu-Tah, 1998, *Contemporary Taipei Planning in the Japanese Colonial Period (1895-1945)*, Taipei: Taiwan Urban History Research Studio. (in Chinese)
- Lamley, Harry, 1977, 'The Formation of Cities: Initiative and Motivation in Building Three Walled Cities in Taiwan', in William Skinner (ed.), *The City in Late Emperial China.* Stanford, California: Stanford University Press, p.155-209.
- Bureau of Urban Development, Taipei Municipal Government, Taiwan.

Reports from Municipal and service agents

Principal reports and plans on the urban development of Taipei were collected from the Municipal government and service agents. Data included: census of population, cultural activities, ceremonial activities, economic activities etc.

- Ministry of Interior, 1997, *Regular Comprehensive Review of Urban Planning Action Plan*, R.O.C. (in Chinese)
- Taipei Census Bureau, *1997, Taipei Statistics Report*, Taipei Municipal Government. (In Chinese)
- Taipei Municipal Government, 1994, *Taipei Urban Planning Report*. (In Chinese)
- Hwang, Wu-Tah, 1998, *Contemporary Taipei Planning in the Japanese Colonial Period (1895-1945)*, Taipei: Taiwan Urban History Research Studio. (In Chinese)

Official Urban Plan

Data of urban master plans and urban design plans of the two districts were also collected, such as layout plans, land uses and circulation movement plans, street patterns and public open space plans. Other data collected included census of households and population distribution, types and numbers of businesses in the districts.

<u>In Eastern District</u>:

Bureau of Urban Development, 1994, *A Comprehensive Review of Shin-Yi Special Area Detail Plan* (Eastern District), No.83039278, Taipei Municipal Government. (In Chinese)

In Western District:

Bureau of Urban Development, *Taipei Terminal Station Special District Plan* (in Chinese)

Bureau of Urban Development, *Wah-Shan Terminal Station Special District Plan* (in Chinese)

Bureau of Urban Development, *Implementation Plan of Sei-Mun (West Gate) Pedestrian Network Overall Landscape Improvement* (in Chinese)

Bureau of Urban Development, *Hang-Yang Road Surrounding Area Urban Renewal Plan* (in Chinese)

Bureau of Urban Development, *Sei-Mun (West Gate) Market Area Urban Renewal Plan* (in Chinese)

Bureau of Urban Development, *Chiang Kei-Shek Memorial Hall Special District Plan* (in Chinese)

Bureau of Urban Development, *President House Area Special District Plan* (in Chinese)

3.6 On Analysis Methods

Having obtained the data and information, further analysis consisting of the conceptual structure and the spatial transformation of the city was needed. A graph-theoretical technique based on Space Syntax theory and statistical methods was applied for the analysis of the gradual change of urban forms and configuration of the city. They were performed by a computer simulation of spatial aspects of the city. The analyses of these changes were measured by means of syntactic properties such as integration, connectivity, intelligibility and depth from the axial and convex maps. A procedural analysis of these syntactic properties has to follow five steps:

1. To study the whole open space system of the city and develop a plan;
2. To transcribe the plan of open space system into convex space map. The study of the convex map can reveal the number of blocks, defined as 'islands (I)'[37] in the whole district. The total number of buildings is also counted within the boundary of district for the purpose of convexity measurement[38];
3. To superimpose the axial lines over the convex map which is transcribed into axial map;
4. To perform the axial analysis by the computer simulation study;

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[37] The 'island' in space syntax is defined as a block of continuous buildings completely surrounded by open space. In this study, a school surrounded by walls is regarded as one block even though it is more than one block in reality.

[38] In effect, the total number of buildings within the boundary of the school is also counted as one for analysis due to the fact that walls enclose the area of school to prevent public use.

5. To construct the graph study of correlation between syntactic properties such as scattergrams which show the 'intelligibility' (Hillier, 1998:313-4), 'part-whole relations' (ibid., 172-173) and 'social interfaces' (ibid., 194-7) in urban space.

The configurational analysis is actually a study of the relational system of the district within the whole context of the city where any local change in that system has global effects across the system. Based on the theory of Space Syntax, it is clear that although the analysis is a purely mathematical representation of pattern, it helps us to understand the relationships between society and urban space through such evolving patterns. Land use, density, and other functional uses can also be added to the model for further analysis.

In addition, qualitative analysis was also used to interpret the spatial phenomenon with the results of syntactic analysis that was likely to enhance the validity of examination of how the interaction between socio-cultural activities and spatial forms were performed and linked to spatial transformation in reality. The method of Space Syntax validates the results by describing spatial configuration and relating it to social patterns of activities, movement, behaviour and social meaning. The observation of behaviour and movement is important, as Penn (2004) argues, "to find out something about how those societies reproduce, transact, and generate new social forms, and about how spatial environments relate to that". In point of fact, Space Syntax has proved from many case studies of European cities that there is a very strong correlation between movement pattern and spatial configuration (See Hillier and et al., 1993, Hillier, 1998 and 2001; Peponis et al., 1989). However, there is a lack of sufficient discussion of such relationship in the spatial context of most Far Eastern Asian cities where different social lifestyles lead to the construction of specific spatial form, for example, shophouses running along a linear public market street in the old quarters of Taipei.

3.6.1 The Analysis Strategy

In accordance with the conceptual framework and the objectives of this study, the analysis strategy was carried out at three hierarchical levels: 1.The macro city level, 2.The district level, and 3.The micro urban quarter level.

At city scale level, the major task was the analysis of spatial transformation in relation to the historical development of Taipei from the late Ch'ing Dynasty through the Japanese Colonial Period to the present time. Base maps for spatial analysis included 1895's Three Market Street Urban Plan, 1925's Taipei Plan, 1945's Taipei Street Plan, 1956's Taipei Urban Land Use Plan, 1975's Taipei Urban Land Use Plan, and 1998's Taipei Survey Plan. Evidence of spatial developments from the analyses of these base maps in time-order gave a clear overall picture of how spatial forms of the earliest settlements along Tamshui River were transformed and the shift of centrality upon the spatial expansion to the outskirts of Taipei Basin. Spatial structures of the city with reference to these plans were studied to explore their integration cores and intelligibility. They showed that key public spaces and important functional streets could be seen from the integration cores of the old settlements. According to Hillier (1992:42), 'Cities are large collections of buildings linked by space. Buildings represent economic, cultural, social and residential opportunities. Space connects them into a system of mutual accessibility.' This analysis was also used to measure the 'depth' or 'shallowness' of any segment within the overall spatial structure relative to the most integrated core of the city that would indicate the spatial relations in a settlement as a reflection of the logic of access relations between the spaces of the paths.

At district level, the analysis included the old Western District (Wanhua) and the new Eastern District (Dian) of Taipei. These two different districts represent two hierarchical city centres and contain domains of distinctive neighbourhoods which deliver different characteristics and identity of urban forms and patterns. The Western District has a longer history of development than the Eastern district since its first settlement started to be established along Tamshui River in Taipei Basin in early Ch'ing period. On the contrary, most of the areas in Eastern District were developed after 1970's. So the axial analysis of the new district was primarily based on 1975 Urban Plan and 1998 Taipei Survey Plan (1/1000). The intention of the analysis at this level was to relate the spatial structure to function and land use of the areas, and also to study how local social life activities were oriented to these two dominant centres. The investigation of these districts would further show their changing inter-relationships between centre and edge of the city in terms of their 'power' structure and ideological difference in the process of spatial transformation that dominate the past and current spatial structure of the city.

At micro urban quarter level, spatial analysis includes the areas of Hsimenting and Dinghou. Both quarters are formed of grid layouts but in different scale and representation. It is likely that Hsimenting is a colonial grid pattern while Dinghou is a post-colonial grid pattern with respect to their time of spatial construction. Detailed analyses of the correlation between daily life activities and urban forms and patterns in these two quarters were carried out in order find out genotypes or underlying structures within such spatial organizations. The analysis was aimed at finding the reasons for the formation of spatial structure which may explain the transformation and may have affected the construction of the spatial patterns of the old and the new urban quarters, in terms of their difference between social movement patterns and land use patterns. The spatial structure of these two quarters could reveal their difference by analyzing the integration cores and organisation of depth structures, which are invariably associated with dominant socio-urban factors, such as occupational use of space, circulation pattern, and pedestrian activity. This approach was a configurational analysis with an investigation of integration cores at global level which attempted to reveal the spatial difference of these quarters from the study of relations between pedestrian movement pattern and usage of urban space and urban patterns.

Finally, a comparative review of the spatial analysis of built forms in both districts of Taipei was carried out. The aim of this analysis was to trace some of the important meanings from the traditional urban forms such as temple space, or linear and narrow market street. It is suggested that while the general features of the contemporary urban form appears to be undistinguished and universal; there are still some specific patterns which have evolved from particular cultural origins, and thus are distinctive and circumstantial. The reading of traditional urban forms and their impact on the contemporary urban form would lead to a way of examining the specific interactions between them. The method used here was a factual comparative tool to explain the correlation between commercial and social movement patterns, land use patterns and rate of spatial attraction of these two districts.

3.6.2 Meanings of some terminology used for syntactic analysis

- **Convex Space**

In space syntax, convex space is defined as the widest area of the open space structure of a settlement. The spatial patterns of settlements or urban areas are at the level of highly complex

and differentiated situations. So Hillier proposes two kinds of spatial description to deal with such a complex system. One of them is 'convexity' (Hillier and Hanson, 1984: 91, 96) which is characterized by its two-dimensional description and is expressed in a convex map. A convex map shows the lowest set of the widest convex spaces in any configuration. It is can be made to break up a system of public space – like a town or village. This identifies the fewest and widest (fattest) convex spaces that cover the system; that is to say fat spaces always prevail over thin spaces. The convex space is one in which all points are directly visible and accessible from all other points, i.e. there are no hiding places.

The measurements of 'convexity' for convex spaces are as the follows:

1) Convex articulation: is the total number of convex spaces divided by total number of buildings. Low convex articulation value indicates less break-up and therefore more spatial synchrony in the urban structure or vice versa (Hillier and Hanson, 1984:98).
2) Convex deformation: is the total number of convex spaces divided by total number of islands. The value of the convex deformation shows the degree of the irregularity of the urban grids. If the degree of the convex deformation is low, it reflects more geometrical and angular characteristics in its urban structure or vice versa. The deformation of the grid creates local identity of a place (ibid: 90, 125).
3) Grid convexity: is defined as the equation: G (convex) = $(\sqrt{I}+1)^2/C$ where I is the total number of islands, C is the total number of convex space. If the degree of grid convexity is high, it shows the urban structure has a stronger tendency of geometrical and angular characteristic or vice versa (ibid: 99).
4) Convex ringiness: is defined as R (convex) = I/ (2C-5), where I is the total number of islands and C is the total number of convex spaces. The convex ringiness represents the number of rings in the spatial system. The higher the value of the convex ringiness means the higher the number of rings (ibid: 102).

- **Axial line**

The axial line is the main constituent in the theory of Space Syntax. The axial line represents a distance up to which observers can obtain a degree of visibility and permeability without interruption. It delivers the concept of 'axiality' (Hillier and Hanson, 1984: 91, 96) by its one-dimensional description of space. It is used to identify the fewest and longest straight

lines of sight and access, which pass through every convex space in the system. All axial lines are drawn in an axial map which has measures attached and that axial articulation compares the number of axial lines with the number of buildings in the system.

The measurements of 'axiality' for axial lines are as the follows:

1) Axial articulation: is the total number of axial lines divided by the total number of buildings. Low value reflects a higher degree of axiality that means there are more continuous linear lines in the urban layout. In contrast, the high value indicates more break-up and more twists and turns per unit length within the urban structure of the district, i.e. a reflection of non-axial urban structure, or curves and angles (not geometric) in the open space structure (Hillier and Hanson, 1984: 99).
2) Axial integration of convex space: is the total number of axial lines divided by total number of convex spaces. Low value indicates a higher degree of axial integration in the convex spaces and vice versa (ibid: 99).
3) Grid axiality: is defined as the equation G (axial) = $(\sqrt{I}+1)^2/L$, where I is the total number of islands and L is the total number of axial lines. It is the measure of the comparison of an orthogonal grid with the number of islands, where high value indicates a stronger tendency to a grid structure and axiality or vice verse (ibid: 99).
4) Axial ringiness: is defined as R (axial) = I/(2L-5), where I is the total number of islands and L is the total number of axial lines (ibid: 104).

- **Boundary graphs**

Space syntax analysis is interpreted by the idea of a graph. A graph is a way of drawing any set of relations between elements, such as relations of kinship, relations between positions in an organisation, relations amongst spaces, and so on. The element is always represented as a small circle, or node, and the relation with other elements as lines, or links, joining the circles. There are two obvious ways this can be applied to big scale development of urban spaces such as estates or quarters of a city. First, an adjacency graph is made to show the adjacency relationship between a set of paths. Second, a permeability graph, or access graph is designed to show access relations between the spaces of the paths. Obviously, there cannot be a relation of direct permeability, which is not a relation of adjacency. The permeability graph is therefore a sub-graph of the adjacency graph (ibid: 132-140). The simplest kind of permeability graph is

one in which the boundaries of a space define each spatial element. That is called a boundary graph (See Hillier and Hanson, 1984:136-137, Fig.78). Permeability is measured by the concept of depth, as depth measures the number of changes of direction at any time in a system that is away from a selected line or lines. This is the way of finding genotypes or generic features of urban form.

• Justified graph

Graphs are not much more informative about spatial structure than layout drawings. The justified graph is a useful technique to visually clarify its structure. The justified graph can have a graphic way of illustrating how more integrated spaces pull the configuration close to the root (or the carrier space) and how more segregated spaces push the remainder of the configuration away from different points in a configuration. The shape of the graph captures a depth distribution from a point in an overall shape. This shape will show how examples differ in terms of depth and rings, which are the two fundamental syntactic properties of all spatial configurations (Hillier and Hanson, 1984:106 & 138).

• Mean depth

This is the first calculation to show the relationship of spaces at different levels of depth from the root (or the carrier space). It helps visually to follow what is going on if you have a justified graph. The equation is the total number of spaces at each level of depth by the value of the level (n) divided by k-1, where k is the total number of cells in the graph including the root. This gives the mean or average depth of all other spaces from the root. The essence of mean depth is, thus, to show that each line in the system has a certain minimum average line 'depth' from all other lines, but it is not necessarily a function of distance. Besides, the mean depth will vary with the root of the graph, since the shape or distribution of spaces within the graph will also vary with the root (Hillier and Hanson, 1984:149-152; Hillier, 1996:160).

• The measurement of integration core

The integration core can be measured from the axial map. It refers to the number of intervening lines or segments of lines counted in the axial map which gives the basis for a

measure of integration. In other words, the values of integration are dependent upon the size of the urban area. According to Hillier (1996:160), 'the "integration value" of each line reflects its mean linear "depth" from all other lines in the system'. Relative asymmetry (RA) is used to measure such integration and it overcomes the problem as mean depth varies with the root to some extent. However, like mean depth, RA varies from point to point in a configuration, depending on the depth of all other spaces in the configuration from the root.

RA can be calculated from the following formula: RA = 2 (MD-1)/ k-2, where MD is the mean depth from a space and k is the total number of spaces in the complex. The formula will always give a number between 0 and 1. The RA of a space expresses the degree to which it is integrated or segregated within a configuration. In general, the more a space is integrated, the more it pulls all the other spaces in the complex close to it; the more segregated, the more it pushes all the other spaces away (Hillier and Hanson, 1984:108).

The integration value is significant to indicate the integration cores of a spatial configuration, which illustrates a logical explanation of deep structure relation in the complex urban spatial system. The lowest the integration value of a line will be the most integrating space in the system. The syntactic integration values are denoted visually with colours that shift from red, the most integrated line to dark blue, the most segregated line. It is a measure of quality for urban areas. There are two measures of integration, namely 1) global integration and 2) local integration, which are useful to see where the most integrating lines are and what they relate to in the system; but more important is what type of pattern the strong integrating spaces make (ibid: 115).

1) Global integration (Radius-n/RAn) [39]: is the calculation of integration by counting each line in a system in relation to all other lines in every direction.
2) Local integration (Radius-3/RA3): is calculated only up to three lines away from each line in every direction (Hillier, 1996:160). This property measures the localised importance of a space for access within a particular part of an urban network (ibid: 170-179).

[39] According to Hillier and Hanson (1984:18), the formation of 'spatial solidarity' of a city is characterized by its global properties. These properties contain two distinctive features: namely, 'axial space' and 'integration core' (ibid., 1984:101 &115). Axial space possesses a principle aspect of linearity that provides the least depth of all other spaces linking to the original space of the settlement. This is the general measure of 'integration' for the system as a whole.

Besides, the local area effect can be studied through the correlation between local integration and global integration, which is analysed by a linear regression model. Regression analysis estimates the relationship between variables, so that particular variables can be predicted from one or more other variables (Hillier, 1996:171).

- **The measurement of intelligibility**

Intelligibility is used to study the correlation between connectivity and global integration in urban areas. It indicates how the degree of space is connected relative to the others in the whole system. An intelligible system is one in which well connected spaces are also well integrated spaces. It is expressed in the form of the correlation between connectivity and integration properties, where connectivity is the measure of the number of lines that intersect with each line in the system (Hillier, 1966:129). In essence, intelligibility can be used to study an urban system in order to grasp large patterns of the city from the experience of small parts of the city.

3.7 Conclusion

This chapter explains the methodology of this research, which has applied a tentative integrated analytical approach according to the theoretical framework for reading the spatial transformation of the city. The chapter also explains the relationships between the methods of investigation, the objectives of the study, and the data analysis. The approach to this study provides a holistic view for exploration of the issues and problems of present urban forms in Taiwan that would give three perspectives: 1) the phenomenon observed defines a web of interdependent relationships between cultural urban form and daily life aspects, 2) the phenomenon observed is problematic, which through interpretation, defines possible alternative future built environments, and 3) the phenomenon, observed in the context of local culture, redefines a place, purpose, and meaning of design.

- **A holistic and critical view of inquiry and interpretation**

In the present global context, the situation of our spatial development becomes more complex and unpredictable[40]. Understanding the present built environment thus needs to have new methods and thinking in order to deal with fast-changing and ever more complex urban design problems. The essence of these internal demands for changes is a perceived need for 'objectivity' and 'rationality' in the activity of urban design. The integrated multiple approach adopted in this study has justified the way of understanding this particular issue. There are two reasons. First, it uses different methods such as the quantitative syntactic analytic method which is supported by the qualitative data from observation with field notes, informal dialogue with local people, drawings and photographs, in the study of spatial transformation that is not only dealing with the pure physical entity, but also reviewing interaction between urban space and social activity in particular time and place. With the application of different methods, the integrated approach has an advantage in analysing how and why spatial form and patterns of the city are constructed and deconstructed in the historical process of spatial transformation. Second, this approach also provides an open attitude with a holistic and critical view instead of by a closed or exhausted analytic approach to enable objective explanatory interpretations. According to Tile (1984:50), 'objective knowledge is the product of critical rationality', and it is also the 'cultural-relative' to provide the standards of objectivity. The process of this approach provides an exercise of scientific activity within the operation of theoretical framework of this study that posits itself with the ability of self-examination and self-reflection, and that is authentic in generating knowledge of this particular research subject. In the end, this approach attempts to provide knowledge with a new rationale that would avoid the twin perils of an unreflecting objectivity and a retreat into irrationalism. It is likely to deliver authentic interpretation of phenomena of spatial transformation instead of just description of pristine reality.

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[40] The present spatial environment in Taiwan is a reflection of postmodern cultural trend which tends to emphasize joy and beauty instead of manifesting a good change of people's life. The essence of postmodernism is not to reform the city but to live in the city and emphasize commodification in a consuming society of a city. Postmodernism is an international trend as a result of capitalism that changes the life-style of people and subsequently creates a new social structure in association with new type people. In such context, the production of spatial form is adapted with this particular environment.

CHAPTER FOUR: SPATIAL TRANSFORMATION IN TRANSITIONAL CONTEXT: THE EXPERIENCE OF SPATIAL CHANGE IN THE URBAN DEVELOPMENT OF TAIPEI

CONTENTS

Chapter 4: Spatial Transformation in Transitional Context: The Experience of Spatial Change in the Urban Development of Taipei

4.1 Prologue

The reason for choosing Taipei has been explained in previous section 1.6. This chapter contains the first stage of thorough analysis and investigation of Taipei's spatial transformation throughout the course of its historical development. The spatial transformation of Taipei illustrates a rich story of social life and settlement development ranging from the earliest settlement, which was first developed along the banks of Tam-Shui River in Taipei Basin. Then, the Ch'ing government pronounced Taipei as the prefectural centre, decided to build a walled city and regulated the administration of the 'three market streets' within the city. In the fifty years of Japanese colonial period (1895-1945), the city was further expanded and developed. This period was regarded as the first stage of modernization, and indeed made a profound effect on the planned development of Taipei. Afterwards, the Chinese Nationalist government moved to Taiwan after the civil war defeat in mainland China. The central government as an authoritarian state established Taipei as the temporary war-zone capital city of Taiwan until the lifting of martial law in 1988. This period was regarded as the second stage of modernization (1945-1988). But the third stage of modernization after 1988 had a more profound and rapid change on the urban landscape of Taipei, in particular, during the last decade.[41] It was a result of liberation from strict control in the realm of political and social life that helped the booming economy, which propelled urban construction. In each of these historical periods, the development of urban spaces in Taiwan has shown a variety of form and texture reflecting the social life patterns of the city. These spatial configurations manifested the ideology and cultural aspirations of each particular administration as well as the ideals of local government in each of these periods.

Thus, in this chapter, approaching the objectives of this study through the case study of Taipei we need to go through four major periods: the wilderness period before Ch'ing Dynasty, the Imperial Ch'ing Dynasty, the colonial Japanese era and the contemporary period, for spatial analysis. The analysis of spatial configuration, by producing the axial maps on a series of

[41] The analysis of this later stage will be explained in Chapter 5 and Chapter 6.

historical maps, (except there is difficulty to obtain historical maps before Ch'ing Dynasty) and superimposing one on another for comparison, illustrates the pattern of spatial transformation and identifies the uses of particular spaces, and explains how they are integrated with functions. The base maps are reconstructed for axial analysis and have been checked with historical maps, reading the documentary material and comparing it with the archaeological evidence as well as site observation. This method of obtaining the axial models of the city in different periods seems to verify the accuracy and reliability of the axial maps. Maps can genuinely reflect de facto situation at the time without bias that is in contrast with the history of writing, which is as Plato believed, artificial clothing, a distortion or travesty to mask meaning (Plato in Howells, 1999:47). Thus, such analysis seems reliable to define the hierarchical order of the city; hence it plays a vital role in sustaining the city image.

4.2 The birth of Taipei in Taipei Basin

Taipei Basin is located at the northern part of the island, Taiwan, which is also known as Formosa named by the Portuguese in the sixteenth century. According to geological study, Taipei and its suburbs are the site of a basin which was once a huge lake in the Achaean Age but eventually became a piece of vast virgin plains after millions of years. The area of basin covers about 70 square kilometres which is cut across by a main river, Tamshui River with its two tributaries: the Keelung River and Shintien River, which have reflected close relationship in the establishment of earliest settlements. The basin is totally surrounded by a natural layer of mountains as buffer zone with four openings from the rivers down to the sea (Fig.4.1). Its prominent geographic location, rich natural resources, and easy transportation access by rivers, provided strong attraction for immigrants to settle here. Eventually the basin was cultivated to a larger extent and became the largest settlement not only at the northern region but also in the whole island (Chen, 1951; Long, 1991).

4.2.1: The Land of Wilderness

There was no primary data or proof that in what years the land of Taipei Basin was firstly exploited. According to literary resource, it was not until the Ming Dynasty (1368-1644A.D.) that people migrated in large groups across the straits to Taiwan from the Mainland China for resettlement and exploitation. However, Taiwan was still regarded as an outpost, a haunt of savages and pirates and was hardly under serious consideration for development under the regime of imperial Ch'ing dynasty (1644-1911A.D.) until the middle of seventeen century. It was only when General Cheng Ch'eng Kung (also known as Koxinga, 1624-62) defeated the Dutch troops and took over Taiwan in 1661 A.D. that he began to pay much attention to this remote island as a frontier for repelling the Manchu Ch'ing dynasty. Under his rule, a new farming system was enforced and his soldiers were dispatched along the Tamshui River for reclamation and resettlement. That was the early stage of development of the northern part of the island with systematic urban planning similar to the mainland.

However, before the arrival of Cheng Ch'eng Kung, the Spanish and the Dutch had already envisioned the importance of Taiwan in terms of its prominent location and rich natural resources for production and as a trading ground. The Spanish had first occupied Palm Island at Keelung Town, the northern part of the island, from 1628 to 1642 before the Dutch took over the place with the Spanish Fort and the village site from 1642 until 1668. The Dutch further strengthened their control over the northern part of the island and carried out development policies here facilitating the production of sugar and rice, and introducing Protestant Christianity and promoting education as a way of "civilizing" activities for the aborigines (Kerr, 1974; Chen, 1951).

4.2.2: The early form of society and urban space

During the early sixteenth century when the European first came to the island, most of the populations were the native aborigines. A direct interaction between these different social and cultural groups raised deep concerns to define their urban settings. An act of spatial differentiation and orientation was desperately needed for both parties as both groups had envisioned a lot of conflicts at the beginning of colonization. Thus, the colonists had to establish their territories by setting up transitional urban spaces as buffer zones, barriers or common

grounds for interaction in order to maintain social control and cultural dialogue between the two groups. The encounter that took place in such colonial urban space could vary from a war to a transaction. Beyond the establishment of social control, the developments of the earliest settlements were primarily based on the commercial interests which were shaped to accommodate these colonial societies. In turn, the early form of urban space was formed in a limited way as a result of colonial urbanization with emphasis on commercialism.

During the Dutch Mercantile period (1628-1668)

The Dutch were the first foreign power to colonize the whole island for a period of more than forty years (1624-68) after they ousted the Spanish from the northern region in 1642. The Dutch took Taiwan seriously during its occupation (1623-1668) and associated with all the Dutch colonial activities in East and Southeast Asia run by the Dutch East India Company. At that time, the Dutch colonized the island with the purpose of "commercial mercantilism" so that the Dutch opened the remote island to establish a first plantation settlement here as a colonial town, built a castle and a church, and a shipyard for use as a transitional way-station that could fully enhance the exploitation of the resources in the island (Kerr, 1974:2-4; Long, 1991; and Chen, 1951). Eventually, the island, which was never dominated by any political power before, possessed a new social order. They fully exploited the resources of the island. Products such as sugar, rice, tea, and camphor were planted and gradually fostered a different cultural landscape. Instantly, the Dutch built up a flourishing trade with the Japanese and Chinese merchants and of course, took out most of the products, such as sugar, tea, camphor, porcelain and minerals for shipment back to Europe.

At the same time, in order to protect their production activities and safety, the Dutch built a series of forts on the northern coast of the island as well as on the central coast in order to protect their colonial land (Long, 1991:9). The construction of the castle and fort eventually changed the urban landscape and also demarcated their territory from the aboriginal residents with two purposes. First, the Dutch established themselves securely within their own occupied territory. Then they could maintain a sense of identity in the same cultural group and recreate their familiar behavioural settings as a reminder of their homeland.

The Dutch encouraged intermarriage among the Europeans, the aborigines, and the incoming Chinese pioneers. This produced a rugged society in this wilderness island. The Dutch carried out the first technological and social revolution in the island, such as giving a village council system that created a new spatial organization for the society at the time. This new system created a new social order that prevailed in the region in order to establish the Dutch more securely (Kerr, 1974:4). The traditional hierarchical order that prevailed in the aboriginal society was no longer useful. The Dutch carefully maintained the relationship between the native residents through the establishment of chiefs. The chiefs were the link between the colonists and the people. Therefore, when the troop of Ch'eng Cheng-kung expelled the Dutch from the island and settled in the Dutch villages, the wilderness island was left as a productive colony at the time.

During the Ch'eng (Koxingan) period (1662-1683)[42]

Ch'eng Cheng-kung died only five months after he took over the island from the Dutch but his influence was enormous in the later development of the island. Indeed, he introduced the customs, values, and ideology of the Ming Dynasty into the island that not only directed the social life of the immigrant society, but also affected the spatial organization and layout of these early settlements.

In terms of land development, the Ch'eng government followed a 'government field' system, which was initiated by the Dutch, and carried out an extensive military colonization system on the island that had two ultimate aims (Kerr, 1974; Shaw, 1992).First, the systems could enlarge the exploitation of the land into a cash-crop estate. Second, it defined the territory of the new immigrant settlers so that they could protect themselves from attack by the aboriginal tribes. Besides, the adoption of the Ming Chinese system infiltrated the whole immigrant society. The Ch'eng government emphasized the values, system and relationship of 'family' that formally controlled the forms of economic and spatial hierarchy in the settlements. For example, the traditional family was usually patriarchal and also regarded as a primary unit of production and consumption. In order to fulfil and maximize such functions and duties, the

[42] 1662 was the year Ch'eng arrived in the city of Tainan which is located at Southern part of Taiwan. In 1668, the Dutch were totally ousted from the northern part of Taiwan by Ch'eng.

settings of spatial structure or organization had to be arranged in a hierarchical order that changed the spatial landscape of the land.

4.3: The First Change in Spatial patterns: Taipei in Imperial Ch'ing Dynasty

In a general view of Taipei Basin's growth and development, most of the lands were still undeveloped in the early stage of Ch'ing Dynasty because Taiwan itself was not even granted a status as a Chinese province. The Ch'ing government had no incentive to invest or develop this remote island at this stage, as it supposed that it offered no immediate benefits or threats. However, when there were a number of uprisings that eventually had a direct impact on the mainland, the attitudes of Ch'ing officials altered from a passive tone to an active involvement in terms of political and development policy.

The earliest settlements like Meng-Chia [43](pronounced in native language as Moungar which means 'canoe', now called Wanhua) along Tam-shui River that was founded in 1701 in Taipei Basin. The settlement came to prosperity and expansion due to a trading business in potatoes and the establishment of numerous potato markets. Later, the Ch'ing officials in Taiwan realized its importance in the Taipei-Keelung region and so established Meng-chia (part of present Wanhua District) as a place of subordinate government with military offices in 1759 that replaced the administrative office in Tamshui to the north (Lamley, 1977:172-173). During its heyday from 1821 to 1850, there were several thousand households in Meng-chia (Chen, 1951).

The second port town, Ta Lung-t'ung, was also founded along the river in 1805 due to the growth of population and business in the region. Meng-chia reached its peak of prosperity with big ships crowding its port and a large population at its markets in 1853. Later, a group of immigrants who came previously from Changchow moved out of Mengchia to Ta-tao-cheng, which was founded in 1851, for resettlement and commercial expansion. Only a few years later, Ta-tao-cheng became so prosperous that it finally replaced Mengchia as the economic centre and the only seaport of Taipei. Finally, these two individual settlements had essentially grown together with a new built inner walled city by the time of Taipei-fu establishment at

[43] The early Meng-chia settlement is indicated as the area surrounded by the following streets nowadays: South of Neichiang Street; North of Kuangchou Street; West of Kangting Road.

Tachianeipo (presently the area of Chengchung District) in 1878. The Ch'ing government became aware that the city should be integrated as a whole and the total development area of the city covered 273 hectare with a total population of 46,710 by the end of 1895, before the Japanese occupation (Fig. 4.2). In 1882, the city wall of Taipei was also completed. Three years later, three new streets were built, at Shihfang (now called Hengyang Road), Hsimen (now at the terminal section of Hengyang Road and Hsinchi (now called Po-ai Road), thus combining the city districts, Tataocheng and Mengchia, into the city (Chen, 1951).

Fig.4.1: Taipei Basin

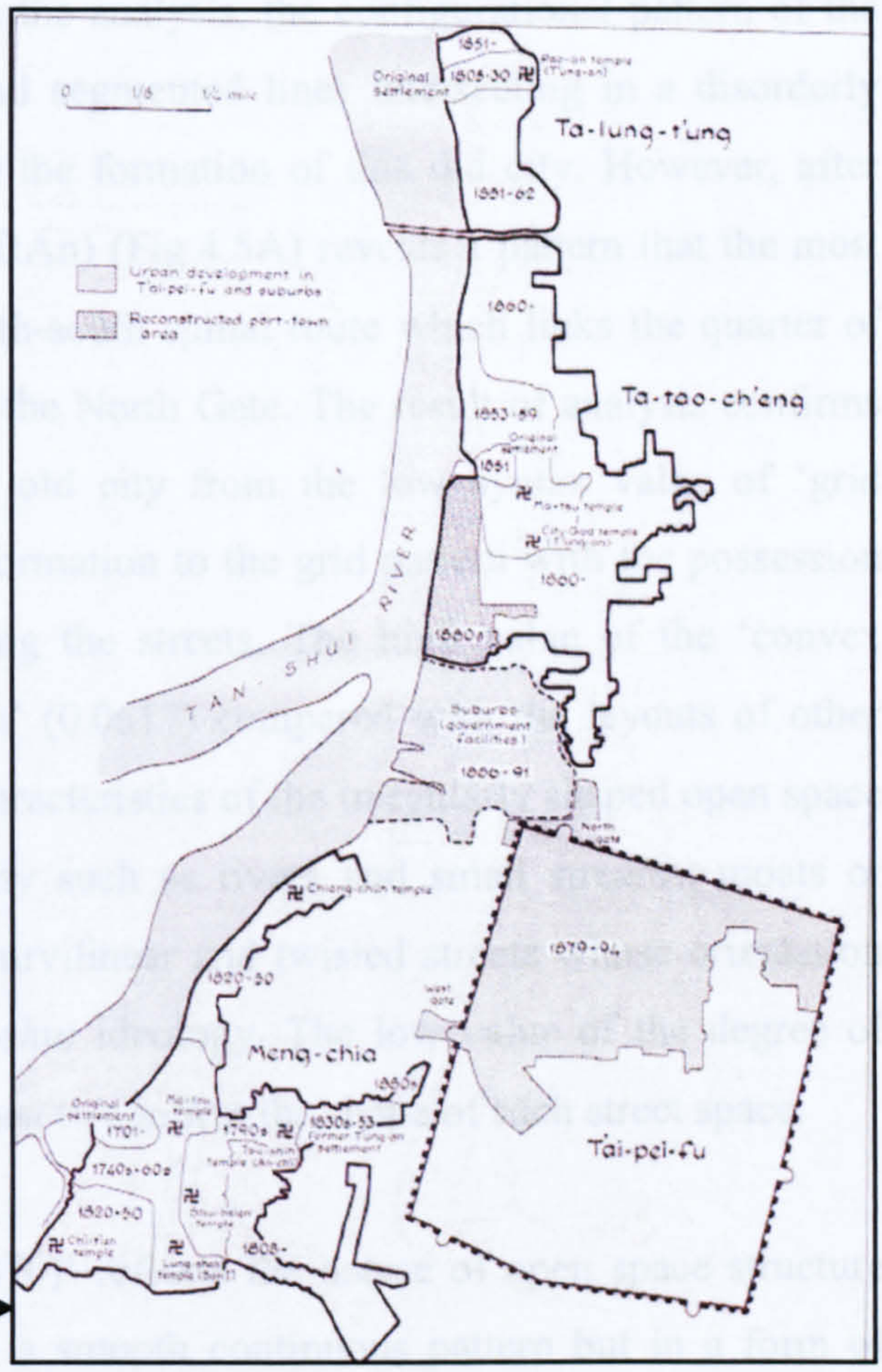


Fig.4.2: The earliest settlements of Taipei in Ch'ing Dynasty (Source: Lamley, 1977:169)

In 1887, Taiwan was detached from the Fukien Province administration and became a new province of mainland China. Governor Liu Ming-Ch'uan implemented the initial movement of modernization by introducing a railroad connecting the north-south of the island from Keelung to Hsinchu, and also set up postal and telegraphs systems (Chen, 1951). Then, the spatial structure and pattern of Taipei came to be transformed itself as the leading model for this frontier island at the time. In order to understand how and why the spatial pattern of the city was

being transformed, the following section is going to demystify the logic underneath the transformation.

4.3.1: A Morphological analysis of Taipei in Ch'ing Dynasty

The spatial study for the 1894 map of late Ch'ing Dynasty has given significant quantitative descriptions of settlements (see Table 4.1) from the analysis of the axial map (Fig.4.5) and the convex map (Fig.4.4). Before the analysis, the configurational pattern of the old city looks chaotic with numerous short and segmented lines intersecting in a disorderly manner. It seems that there is no logic behind the formation of this old city. However, after analysis the result of global integration study (RAn) (Fig.4.5A) reveals a pattern that the most integrated lines are formed along the main north-south spinal route which links the quarter of Tai-tao-ch'eng to the inner walled city through the North Gate. The result of analysis confirms the asymmetrical and organic pattern of this old city from the low syntax value of 'grid convexity' (0.4476) which indicates a high deformation to the grid pattern with the possession of many twists and turns per unit length along the streets. The high value of the 'convex deformation' (2.5988) and 'convex articulation' (0.0617) compared with the layouts of other samples at different stages also illustrate the characteristics of the irregularly shaped open space structure, which follows the natural topography such as rivers and small streams, moats or ponds and is also reinforced by the shape of curvilinear and twisted streets whose orientation are somehow based on the principles of *feng-shui* ideology. The low value of the degree of 'axial integration of convex space' (0.8741) is just to confirm the shape of such street space.

The low value of 'grid convexity (0.4476)' reflects the nature of open space structure linking the separate quarters which are not in a smooth continuous pattern but in a form of twisted angle and curve. Besides, the values, defining the degree of 'convex and axial ringiness', reveal the characteristics of organic texture of these early settlements. Indeed, the spaces in between these three quarters were basically large swamp lands or open spaces such as cemetery, moats and ponds according to the historical map. These open spaces are seen as transitional space to define the boundary of Meng-chia, Tataocheng, and the inner walled city at the time. The axial map reveals two major spines of the city that can be traced as direct linkages connecting these three separated quarters. One is understood as forming along the west-east

direction by connecting the quarters of Meng-chia to Tai-pei-fu via Westgate and passing through three temples of public communal spaces: Ma-tsu temple, Ch'ing-shui tsu-shih-kung *miao*, and T'ien-hou kung. The other one is along the north-south route connecting the quarters of Ta-tao-ch'eng and Tai-pei-fu via Northgate (Fig.4.3). The continuous major vertical paths pass through eight temples space and some major administrative buildings that dominate the spatial character and scale along the routes of these twisted streets. Both of these routes provide common passages for people having easy access among these quarters.

Seemingly, when the local context is studied, the results of the RA3 axial map (Fig.4.5B), which is transcribed from the convex map (Fig.4.4) and the scattergrams (Fig.4.5E-1 – 4.5E-4) reveal that the pattern of integration has been changed so that the integration cores shift to the hearts of Ta-tao-ch'eng quarter at the north and Meng-chia quarter at the south. The value of the degree of 'mean integration' is low (RA14=0.7042) and expresses a stronger local integration of the old settlements than the other periods of the city. The integration cores in these quarters show exactly the locations of historical market streets and temples with miao-ch'eng (temple square) along two major routes when superimposed on the historical map as described above. These cores are seen as central dynamic places that connect some other important routes radiating outward through other parts of the city to the periphery. All major daily life activities are generated in the integration cores that serve as communal spaces for the neighborhoods. Other forms of commercial activities also happen along the paths and around the temples.

Besides, the low value of 'intelligibility correlation' ends up at 0.2558 (RA14) (Fig.4.5D), suggesting that the spatial system of the city is unintelligible as a whole and this implies an organic spatial pattern. Instead it signifies clearly a demarcation of these three quarters but with their solid boundaries to define themselves. The finding is believed to be reasonable and understandable when checked with the historical documents, that the separate entities of communities reflect the structural patterns of different social organizations in relation to the agglomeration of sub-ethnic groups, and the distribution of temples in the traditional settlements, which will be explained in the ensuing section.

According to their social and spatial patterns, historical settlements such as Chang-chou village, Chuan-chou village (from Fukien province), or Hakka village (from Kwangtung province) could be easily identified because each settlement contained its own social solidarity and character distinctive from the others. For example, Anshi people occupied the small settlement to the east of Meng-chia while Chuan-chou people formed the large settlement to the west of the area (Hchu, 1975). In this condition, it seems that the different social ethnic groups that resided together could solidify their own identity with a strong boundary, but weaken the connection and permeability between the domains of community quarters in the early settlement of Taipei as a whole.

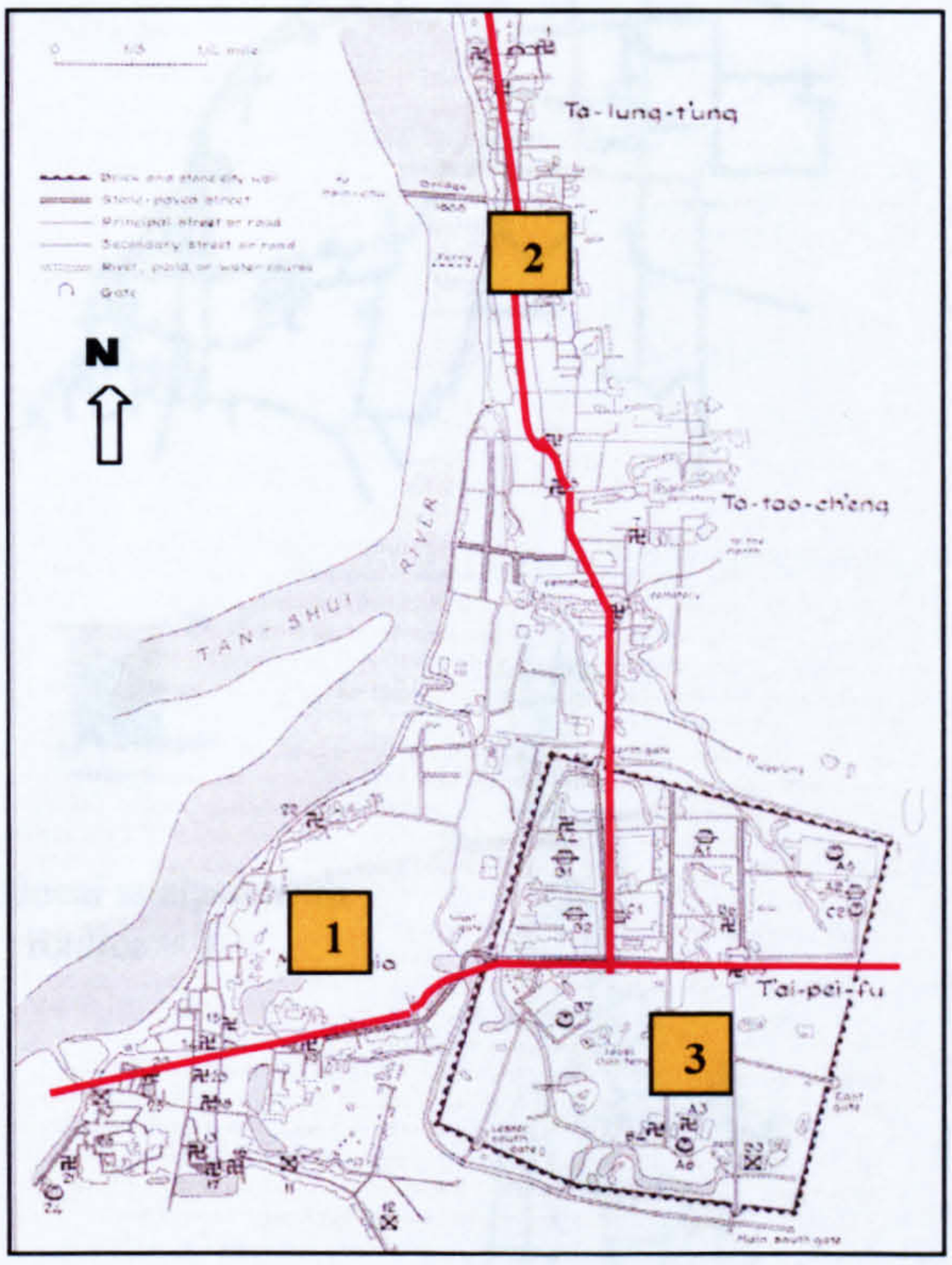


Fig.4.3: Two major spines, north-south route and west-east route, connecting three separated quarters of Taipei in 1895 are calculated from the most integrated lines

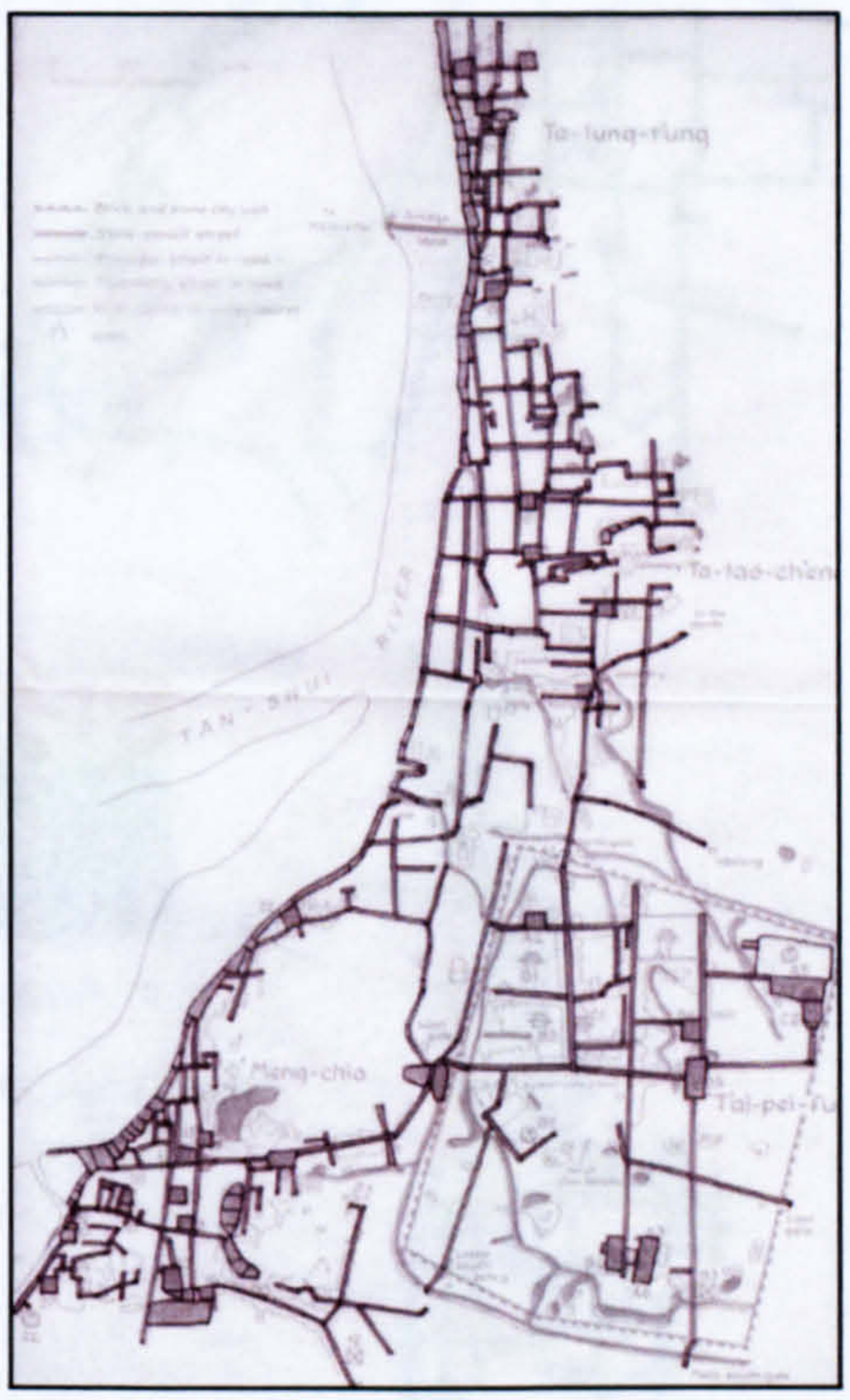
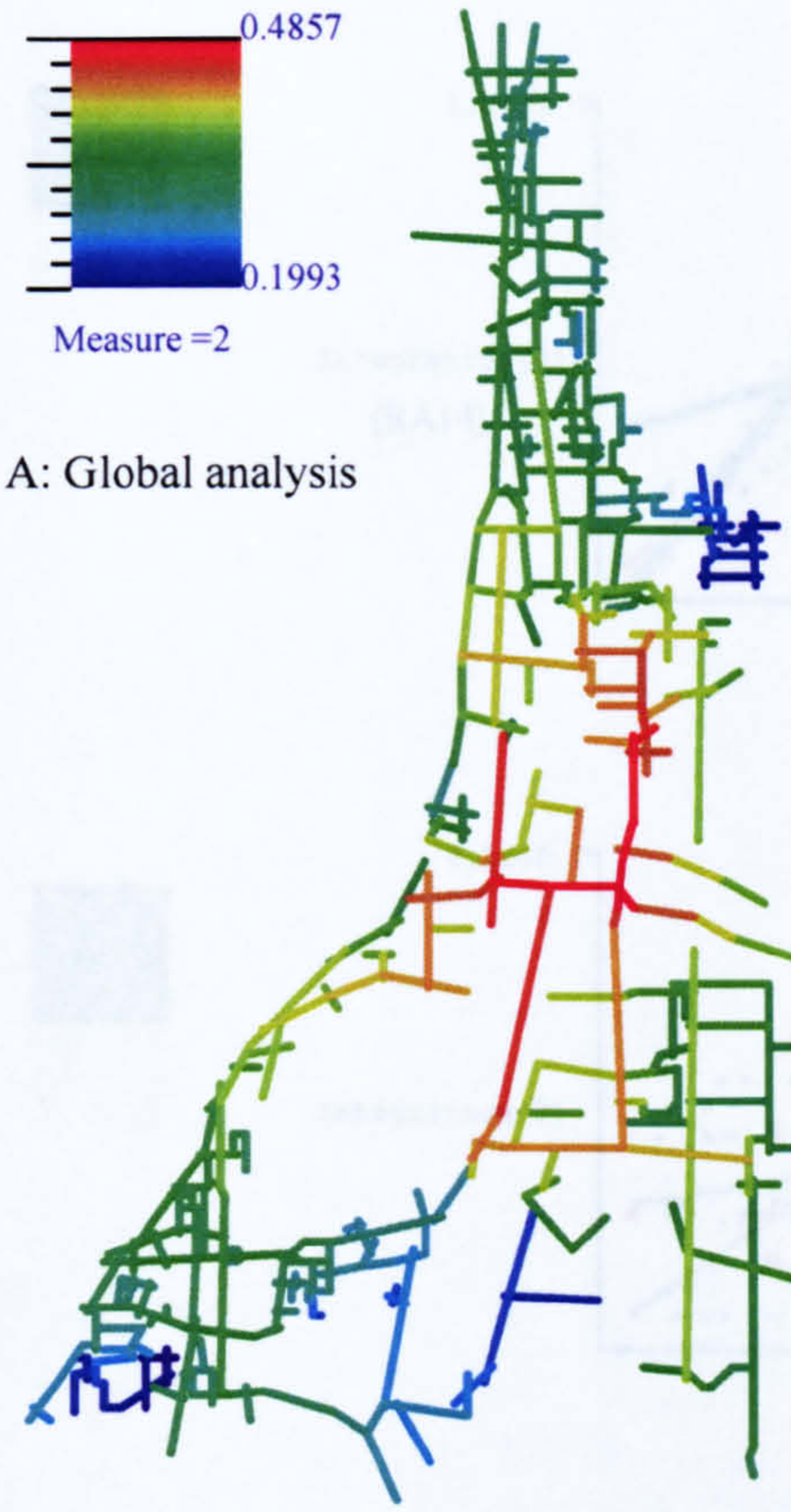


Fig.4.4: Transcription of the plan into a convex map {total no of convex space (C): 421}

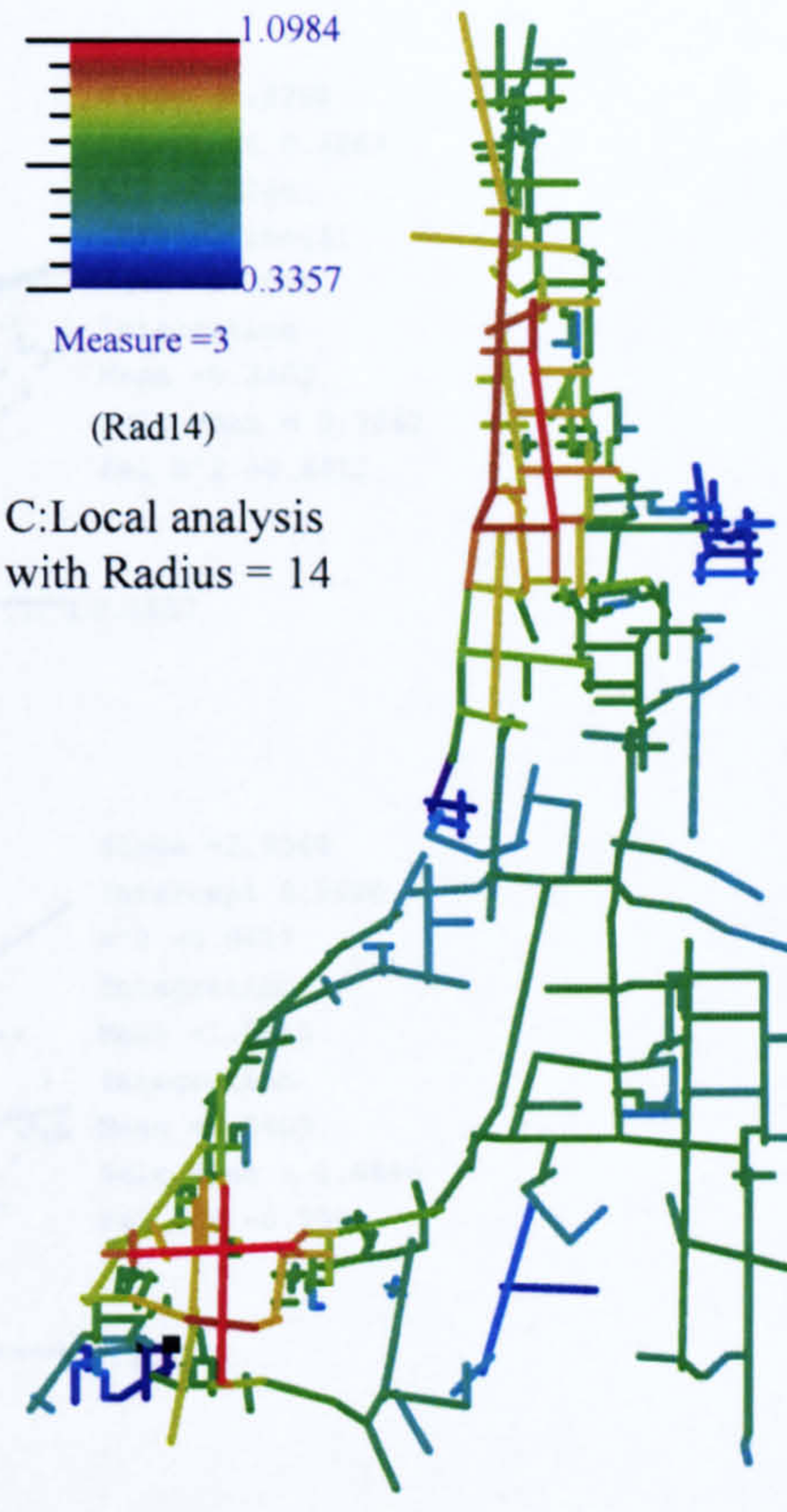
1 Meng-chia **2** Ta-tao-ch'eng

3 Tai-pei-fu

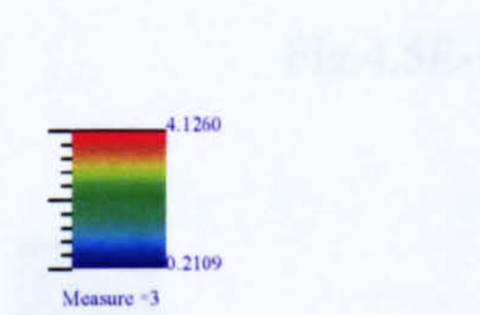
(Source of Base map: Lamley, 1977:171)



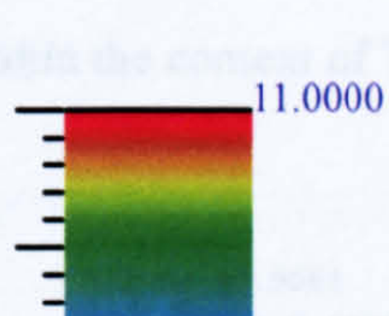
A: Global analysis



C:Local analysis with Radius = 14



B: local analysis with Radius = 3



D: Connectivity analysis

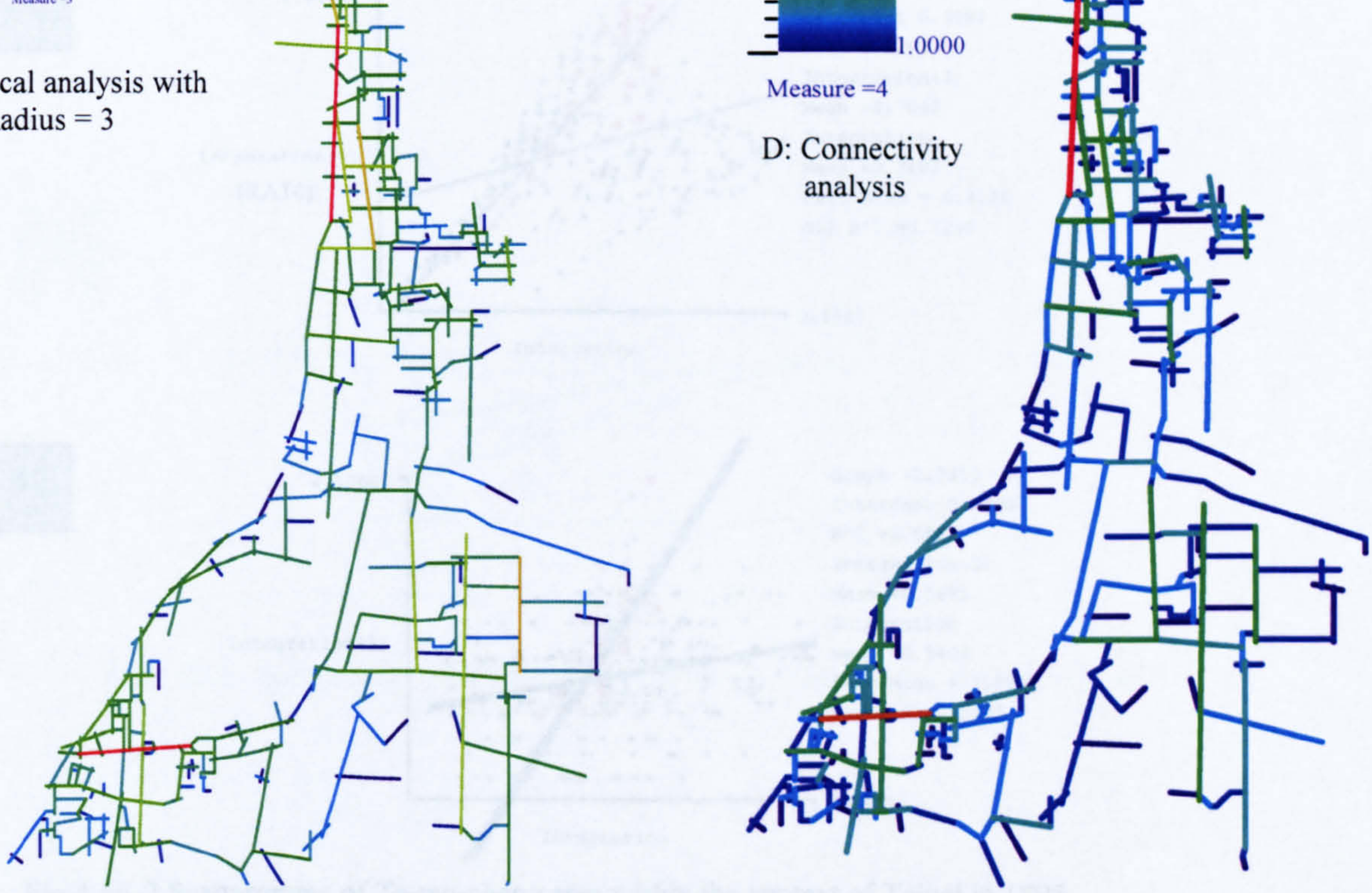


Fig.4.5: An axial analysis of Taipei in 1895

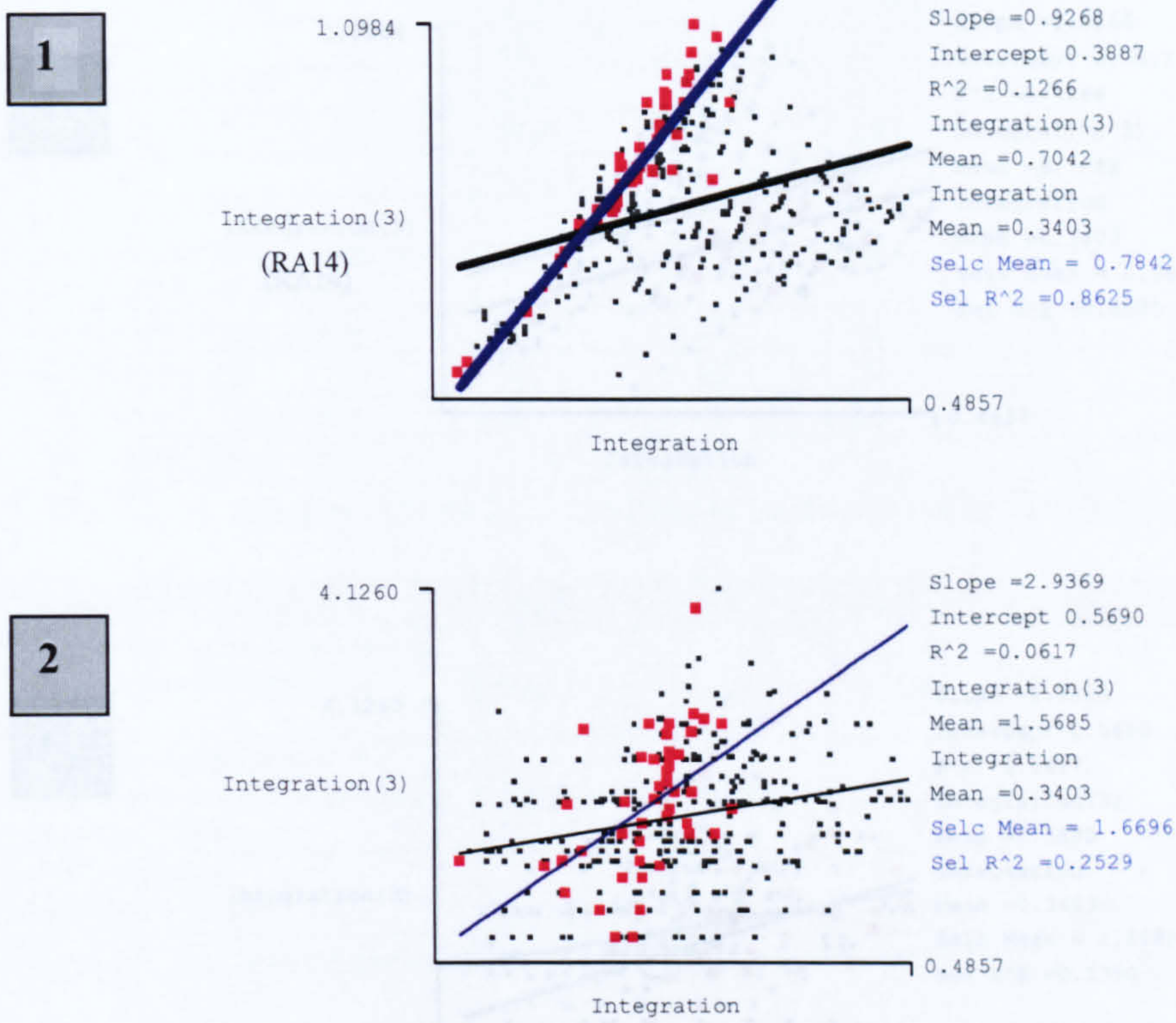


Fig.4.5E-1 Scattergrams of Meng-chia area within the context of Taipei in 1895

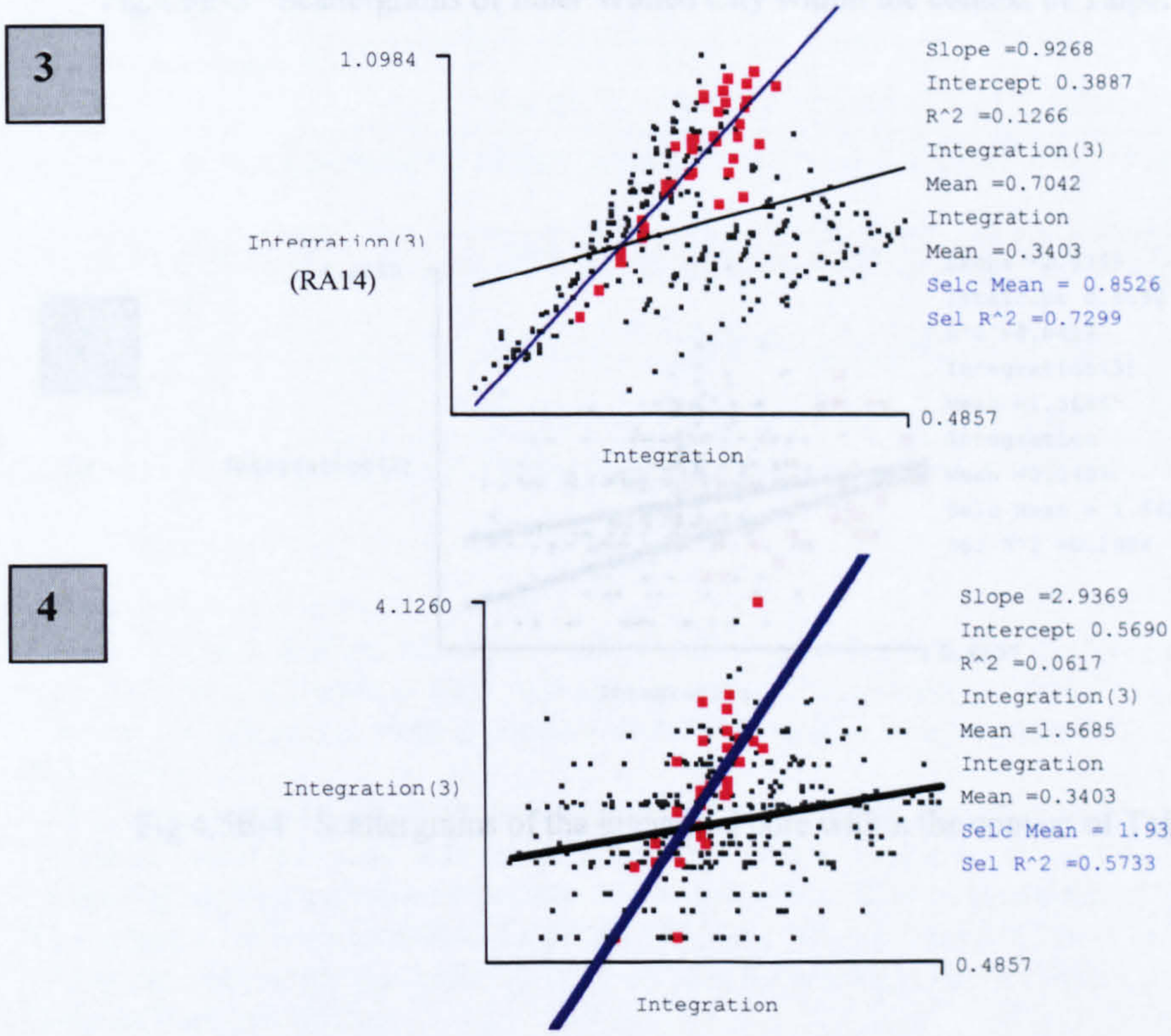
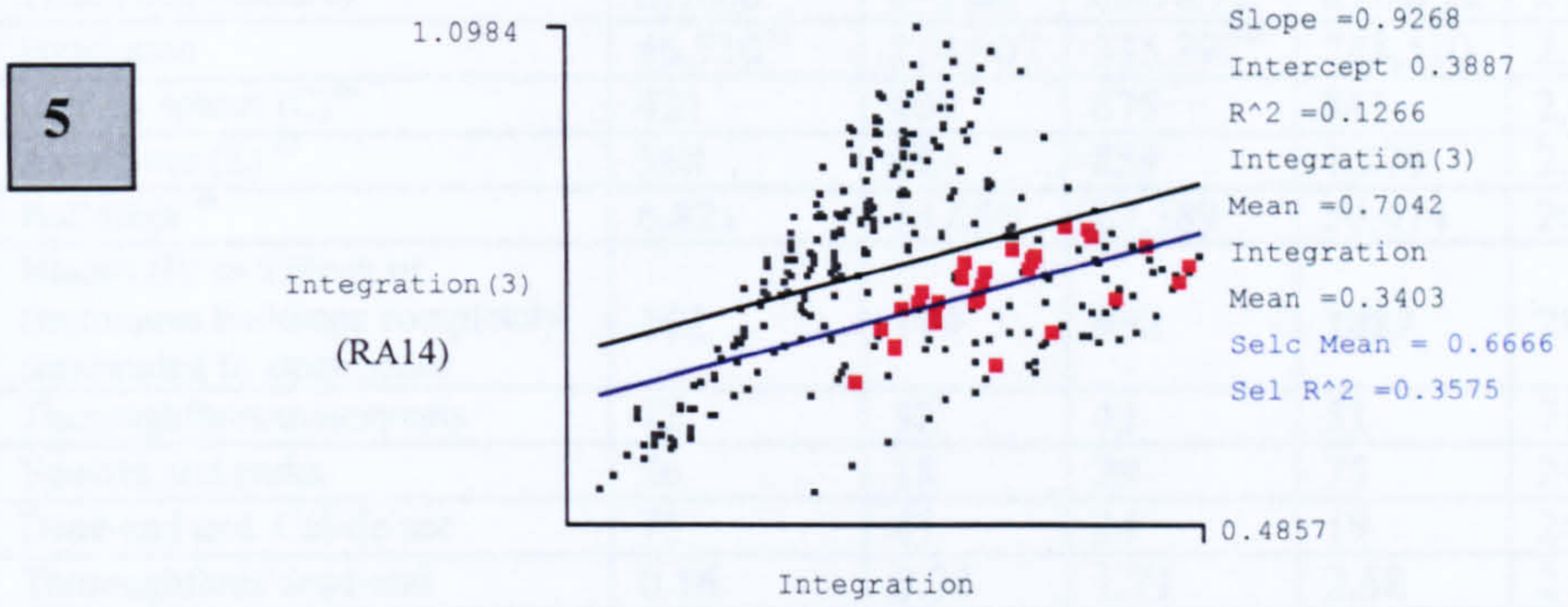


Fig.4.5E-2 Scattergrams of Ta-tao-cheng area within the context of Taipei in 1895



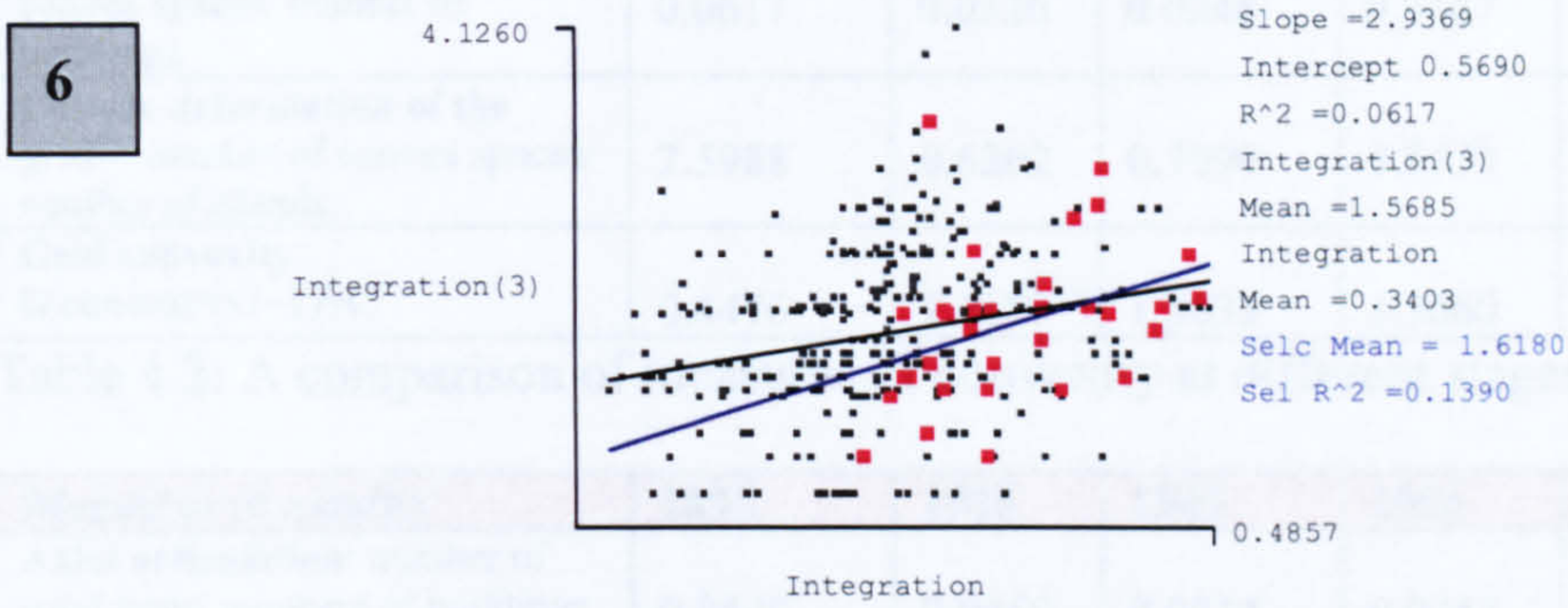


Fig.4.5E-3 Scattergrams of Inner Walled City within the context of Taipei in 1895

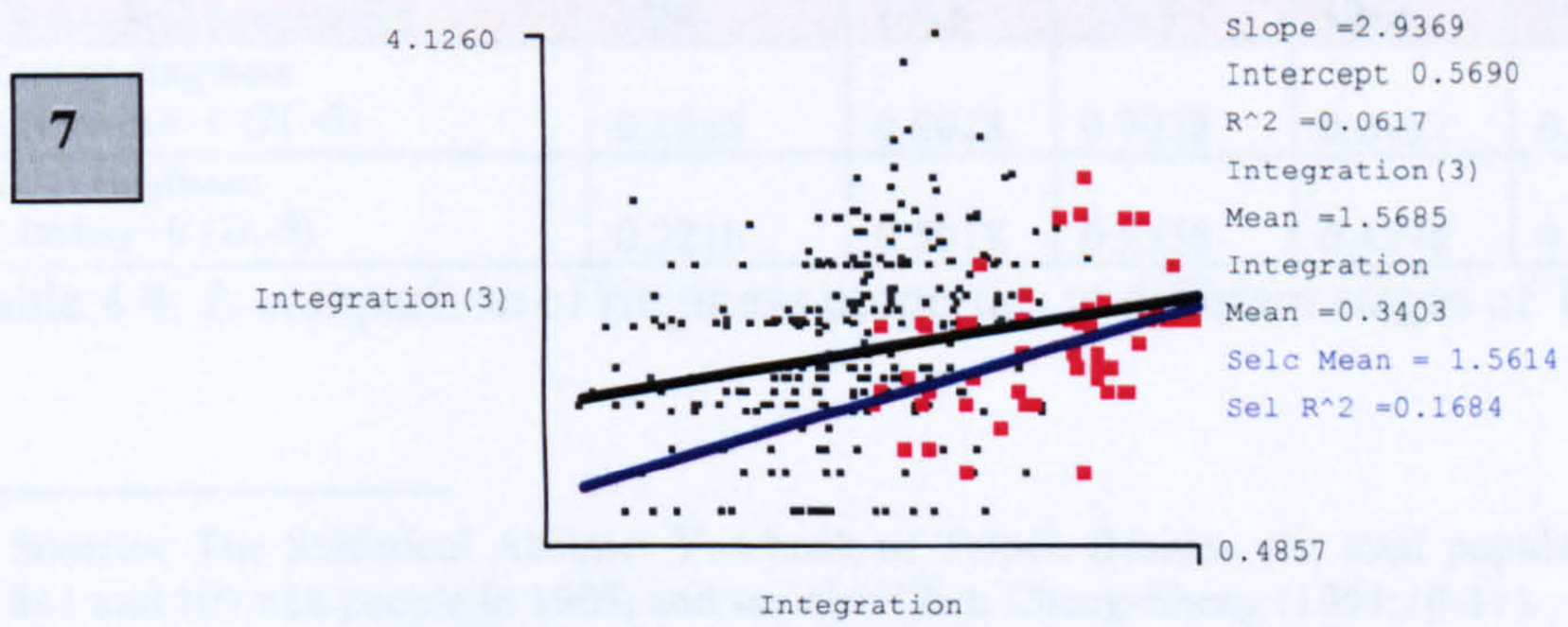


Fig.4.5E-4 Scattergrams of the integrated core within the context of Taipei in 1895

Syntactic properties	1895	1925	1945	1956	1977	Mean values
Total Area (hectare)	273.00	677.00	6,698.72	6,698.72	27,214.18	----------
Population	46,710[44]	214,907	335,397[45]	748,510	2,127,625	----------
Convex spaces (C)[46]	421	469	675	841	2,690	----------
Axial lines (L) [47]	368	687	859	1,279	2,786	----------
Buildings [48]	6,821	14,659	27,389	50,474	200,340	----------
Islands (I): as a block of continuous buildings completely surrounded by open space	162	749	952	1082	2820	----------
Thoroughfares/mainstreets	12	32	41	51	71	----------
Squares and parks	26	18	29	75	249	----------
Dead-end and Cul-de-sac	75	41	24	19	24	----------
Thoroughfares/dead-end	0.16	0.78	1.71	2.68	2.96	1.66

Table 4.1: A comparison of basic syntactic measures at different stages of Taipei

Measures of convexity	1895	1925	1945	1956	1977	Mean values
Convex articulation: number of convex spaces/ number of buildings	0.0617	0.0320	0.0246	0.0167	0.0134	0.0297
Convex deformation of the grid[49]: number of convex spaces/ number of islands	2.5988	0.6262	0.7090	0.7773	0.9539	1.1330
Grid convexity: G convex=$(\sqrt{I}+1)^2/C$	0.4476	1.7159	1.5033	1.3660	1.0882	1.2242

Table 4.2: A comparison of measures of convexity at different stages of Taipei

Measures of axiality	1895	1925	1945	1956	1977	Mean values
Axial articulation: number of axial lines/ numbers of buildings	0.0540	0.0469	0.0314	0.0253	0.0139	0.0343
Axial integration of convex spaces: number of axial lines/ number of convex spaces	0.8741	1.4648	1.2726	1.5208	1.0357	1.2336
Grid axiality: G(axial) = $(\sqrt{I}+1)x2/L$	0.0746	0.0826	0.0742	0.0530	0.0388	0.0646

Table 4.3: A comparison of measures of axiality at different stages of Taipei

Numerical properties	1895	1925	1945	1956	1977	Mean values
Convex ringiness: R (convex)= I/ (2C-5)	0.1935	0.8028	0.7078	0.6452	0.5247	0.5748
Axial ringiness: R (axial)= I/ (2L-5)	0.2216	0.5018	0.5558	0.4238	0.5066	0.4419

Table 4.4: A comparison of ringiness properties at different stages of Taipei

[44] Sources: The Statistical Abstract Yearbook of Taipei. Besides, the total populations were 23, 683 people in 1841 and 107,616 people in 1905, and see also Chen Cheng-Sheng (1951:10-11).

[45] The total population in 1946 was down to 271,754 people because most of the Japanese returned to Japan after World War II.

[46] The convex space is to cover the widest space of the open space structure of a settlement.

[47] The axial line is the basic element of axial map, which is used for settlement layout analysis. It represents the distance up to which observers can obtain a degree of visibility and permeability without interruption.

[48] Due to lack of official statistical data from 1895 to 1945, the total number of buildings is estimated based on the average no. of people per building (=14.66 people/building) with reference to the nearest five years statistics between 1951 and 1956.

[49] The value of convex deformation explains the rate of irregularity of the urban grids.

Syntactic measures	1895	1925	1945	1956	1977	1998	Mean values
Integration[50]: It is a measure of quality for urban areas. It correlates with the movement pattern of an area.[51] Note: smaller RRA[52] values indicate greater integration.	**RA1 Mean=0.3403** **RA3 Mean=1.5685**	**RA1 Mean=0.6925** **RA3 Mean=1.7546**	**RA1 Mean=1.3778** **RA3 Mean=2.5694**	**RA1 Mean=1.3651** **RA3 Mean=2.6785**	**RA1 Mean=1.3439** **RA3 Mean=2.6259**	**RA1 Mean=0.9386** **RA3 Mean=2.4187**	**RA1 Mean=1.0097** **RA3 Mean=2.2693**
Intelligibility[53]: it is the relationship of connectivity and integration in urban areas, i.e.: R^2, connectivity/ integration($0<x<1$)	**$R1^2$=0.0411** **$R3^2$=0.8727**	**$R1^2$=0.2236** **$R3^2$=0.7782**	**$R1^2$=0.2875** **$R3^2$=0.8025**	**$R1^2$=0.2067** **$R3^2$=0.7176**	**$R1^2$=0.1966** **$R3^2$=0.6267**	**$R1^2$=0.1362** **$R3^2$=0.6165**	**$R1^2$=0.1820** **$R3^2$=0.7357**
The relationship of local integration and global integration in urban areas, i.e.:**R^2,R3/R1**	**R^2=0.0617**	**R^2=0.4127**	**R^2=0.4010**	**R^2=0.3556**	**R^2=0.4578**	**R^2=0.3550**	**R^2=0.3406**
Mean Depth	**14.2473**	**8.0175**	**4.4854**	**5.4175**	**5.9156**	**8.1621**	**7.7076**

Table 4.5: A comparison of integration, intelligibility and mean depth values at different stages of Taipei

[50] The values of integration are dependent upon the size of the urban area. The value of a line reflects the mean linear depth of that line from all others in the system (See Hillier, 1996: 160).

[51] It is analysed by a linear regression model, which is a form of statistical analysis used for forecasting. Regression analysis estimates the relationship between variables, so that particular variables can be predicted from one or more other variables.

[52] According to Hillier (1996:163), radius-radius analysis (RRA) means that the integration analysis is set at the mean depth of the whole system from the main integrator. The effect of a radius-radius analysis is to maximize the globality of the analysis without inducing 'edge effect'.

[53] The intelligibility of an urban system helps to grasp large patterns of the city from the experience of small parts of the city.

4.3.2: Specific Characteristics of Urban Space in Traditional Society

From the result of spatial analysis, it can be concluded that the development of Taipei city in this period contained two distinct development patterns. One of them was an organic spatial pattern while the other one was a formal grid pattern associated with feng-shui principles. As a matter of fact, most historical organic settlements were developed along riversides primarily for the reason of attaining easy and convenient access by river to the outside world. In Taipei, three river-port towns, Mengchia, Ta-to-ch'eng and Ta-Lung-t'ung along Tamshui River, were typical examples of those earlier immigrated towns with organic development patterns. They pronounced themselves as places of cultural importance and significant commercial interests.

The patterns of these early settlements indicated the existence of primary social relations in the form of close kinship and clan networks. They justified the family life as a high priority in everyday life at the time that indicated their social practices, their dominant norms, values and systems of meaning, and the meaning of the neighbourhood and the settlement in their lives. The functioning of everyday life was established on the basis of the family structure in relation to kinship and clan networks that was decisively to determine the spatial organization and patterns as well. It is realized that the everyday life "itself" would provide the material for its own articulation. Indeed, everyday practices had characterized the social and cultural forms. For example, the cultural form of the temple not only was a solemn place for daily worship, but it was also an autonomous centre of early settlement and autonomous guild society during Ch'ing Dynasty (Lin Heng-tao, 1962:54).

With respect to the geographical character and commercial function, the development patterns of these early settlements were small and concentrated in linear forms. Two underlying factors were indeed behind the formation of these linear forms. First, the application of feng-shui system is a determinant leading to the setting of the traditional linear market place in a north-south orientation. This orientation is a typical classical layout according to *Choi li* [54]prescriptions. Besides, the linear market-place is connected to an anchor of a temple, which is

[54] Choi li is the ancient classical source for Chinese city theory since Chou Dynasty, in particular its last section known as "Kuo-kung-chi". The texts in this book have conveyed the views of the Confucius school, which determines what the beliefs and rites should be.

normally the centre of the traditional settlement. However, the pragmatic considerations for convenience and functional activities sometimes outweighed the canonical prescription to the formation of market-place within these settlements. Thus, a protective and functional linear and narrow element is preferred as a final solution to defend from outside attack, "armed conflict" (hsieh-tou) and intruders. This narrow linear spatial form created a defensible function from the attack of other sub-ethnic groups such as the conflict between "Hok-lo" people and "Hakka" people. In fact, village rivalries and incessant clan warfare gave Formosa (Taiwan) the reputation of a lawless island. Finally, the nature of earlier port settlements along the navigable body of water (the Tam-Shui River) crucially determined the formation of these linear forms of market places. They were located at key points that were convenient for economic activities both for suppliers from outside the settlements and for consumers within the settlements. These settlements gradually became the centre of Taipei Basin.

4.3.3. Demystification of traditional urban space setting and social life

The structure of urban space setting seems to look chaotic and ambiguous before spatial analysis. However, after the axial maps analysis, it is interesting to see the facts that most integration cores of the old city are often identified with major urban public spaces such as temple, square (miao-ch'eng), city wall and gate, market street space, verandah or arcade, and courtyard. Obviously, logic is behind the setting. They integrate with the main city spines, which are also the most connected lines, and seem to co-exist in a symbiotic condition. In order to understand why these traditional elements are the main constituents of the integration cores of the old city, as well as the communal spaces for traditional society, the ensuing sub-sections will illustrate these traditional entities in order to further demystify the logic behind such setting. To discover the logic of spatial construct is a crucial step as Hillier (1996: 336-337, & 344) asserts that the distribution of integration in an urban system, together with its associated 'built form and land use patterns' is not a static picture of the current state of the system, but a kind of structural record of the historical evolution of the system. These spatial entities had distinctive spatial characters in association with particular social phenomena that provided rich resources for understanding the cultural form of urban spaces regarding their meanings and identities.

• Temples and the form of early settlements

The spatial analysis in the previous section has identified that the early settlements are autonomously developed in organic patterns and closely articulated with the location of temples. An interesting observation from the axial maps is that the temple is always situated at the centre of the community quarter or spatial unit in a traditional settlement. The spatial pattern of the traditional settlement seems to be organized by the distribution of temples. Each temple generates a domain area that becomes an implicit rule for controlling the spatial planning of traditional settlement regarding the number of domains and the relationship between them. And each domain is characterized by its social function and life activities articulated with the temple (Fig.4.6).

At the time, not only was the temple the religious centre for worship, but it was also a communal place for merchants' social gathering (*Chiao-she*). It was quite similar to the function of the civic guildhall in the medieval British village (Lin, Heng-tao, 1962:54). Obviously, the spatial patterns of these early settlements in Taipei Basin were dominated by the distribution of 17 folk religion temples such as *tsung-miao* (literally ethnic temple), *tu-ti-kung miao* (literally Earth God temple), etc. For example, *Lung-shan ssu* (temple) (Fig.4.7) in *Meng-chia* quarter was built ca. 1740 by *San I* natives[55], and acted as an autonomous centre for one of the domains in the quarter settlement. It had the most delicate and beautiful wooden and stone carvings, and shiny gold ceramic ornaments with plentiful colours in keeping with the typical character of temples in Taiwan adapted from the Southern Chinese architecture. The posterior part of the temple was not only used for people's worship of *T'ien-hou* god (*Ma-tsu*), but it was a meeting place for *chiao* merchants too (Ibid: 54). The temple became a landmark and formed a quasi-political centre in traditional Meng-chia settlement that supported and reinforced the solidarity and unity of people in its worship boundary. These social activities naturally brought all people together and integrated the neighbourhoods as a whole.

Indeed, the high value of the degree of 'convex deformation of the grid' (2.5988) just reflects the result of the early autonomous organic quarter settlement, which was controlled by the domain of temples. Indeed, the temple, in particular the folk religion temple, is a

[55] "San-I" natives are the three counties of Chin-chiang, Hui-an, and Nan-an in Ch'uan-Chou *fu*, Fukien, China. (Hchu, 1975)

representation of not only a symbolic centre, but also a social functional centre in the organic settlement.

Besides, the formation of the street pattern or spatial network had also a great deal to do with the spatial arrangement of temple. First, the temple is often located at the end of a vista or the T-junction of streets in relation to the concept of "axis mundi". Second, the streets usually radiate outward from the locus of the temples and generate curvilinear and twisted street patterns to link the routes between these temples in different quarter settlements. Therefore, the combination of the temple and the street space are indeed two major elements to reflect the form and context of early settlement. The street space is studied in the ensuing section.

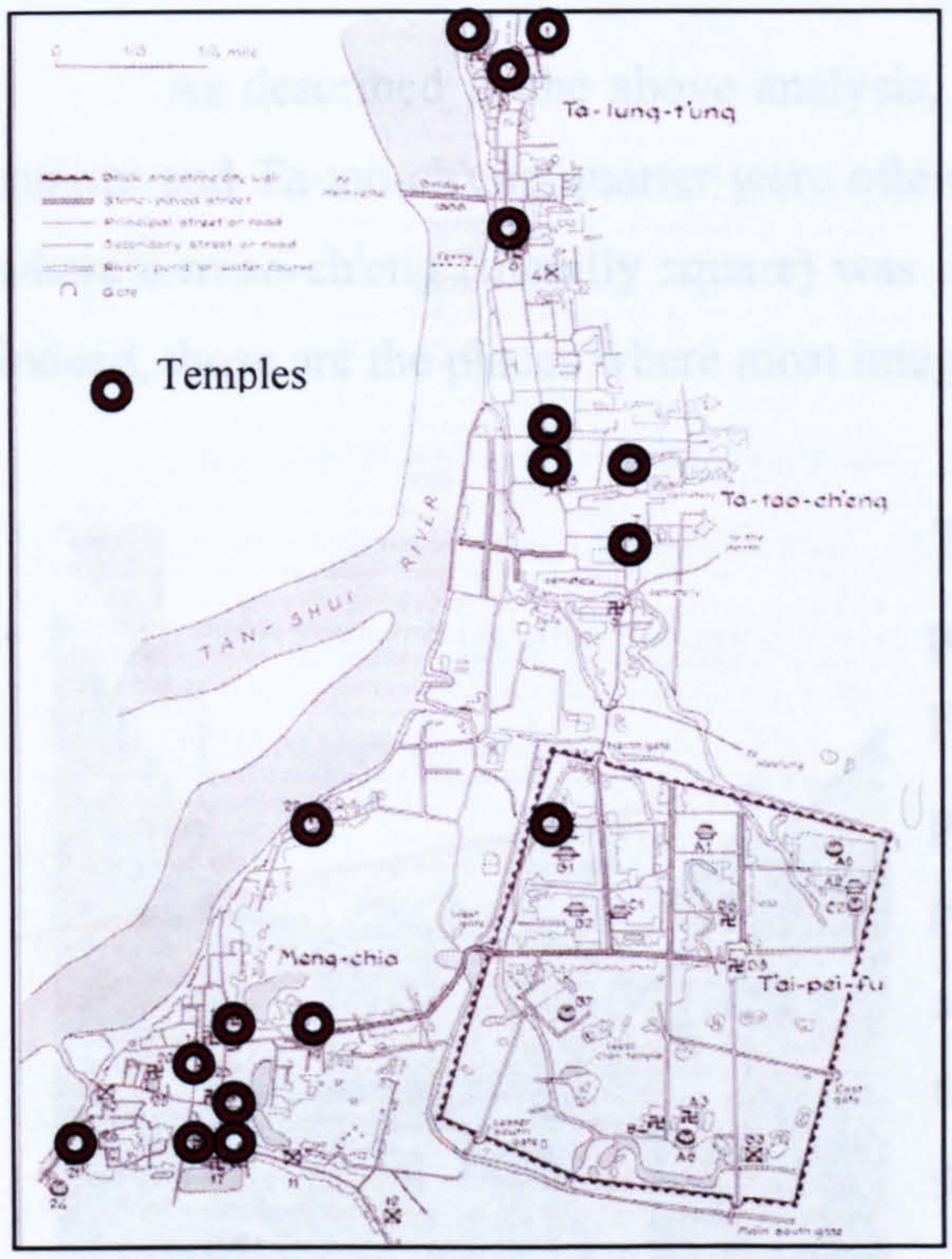


Fig.4.6: The spatial patterns of early settlements were dominated by the distribution of 17 folk religion temples that reinforced their distinctive identity with their own domains.

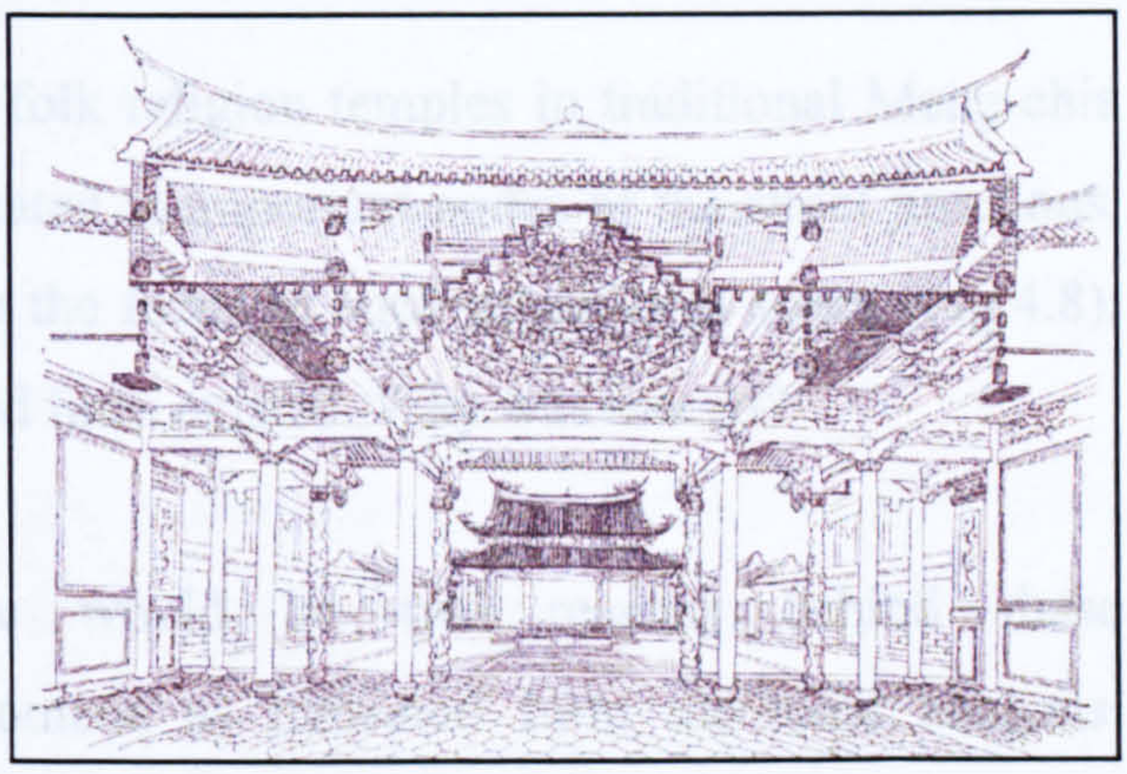


Fig.4.7: *Lung-shan suu* was one of the autonomous quasi-political centres in old Meng-chia settlement (source: Lee Ch'ien-long, 1992)

- **Miao-ch'eng (square)**

The square appears as one important component of complex urban spatial entities. The study has to systematically evaluate the quality of this institutional complex, as vivid living evidence of the 19th century spatial structure of Taipei's river-port towns. According to Sun Chuan-wen (1992:9-10), there were seven functions generated by traditional miao-ch'eng (square) that offered people a variety of activities. They covered political, social, commercial, transportation, religious, recreational, and aesthetic functions for the community. It seems that this type of organization is reflected in the traditional Meng-chia and Ta-tao-ch'eng quarters and also in the way of life of the early immigrants in the traditional society.

As described in the above analysis, the folk religion temples in traditional Meng-chia quarter and Ta-tao-ch'eng quarter were often located at important nodes of the street junctions, where a miao-ch'eng (literally square) was often the focus of such transitional space (Fig.4.8). Indeed, those are the places where most integrated lines existed. Why was that so?

Fig.4.8 Miao-ch'eng (temple square) as the small pocket open space located at the important nodes of the street in traditional settlement.

There would be two reasons behind these phenomena as indicated from the axial analysis. First, it probably correlates with the movement pattern of the area, indicates that miao-ch'eng is the prime element to generate the patterns, and also acts as a receptacle to receive all lines linking to it. In fact, the extraordinarily low value of the degree of thoroughfares to dead-end and cul-de-sac (0.16) reflecting deeper depth from the core means that people live in these quarters. If they wished to travel between quarters, they needed to pass through the main streets or thoroughfares via temples with miao-ch'eng at the junctions which provides residents with a sense of orientation for smooth circulation within the complex organic street

patterns. The fact that the arrival into such urban public space and the departure from it seems to be without any effort heightens its informality. Secondly, blocks of continuous buildings are turned in several directions responding to natural topography and the corners of the folk religious temples also respond to such orientation in order to form informal squares.

The quality of *miao-ch'eng* is imbued with the surrounding building scale and the public activities engaged in the urban space. Two storey height humble buildings, in contrast with the magnificent temple building at the backdrop, often enclose the space amidst the urban fabric that integrates the spatial structure of the early settlement in order to accommodate a significant hierarchical order (Fig.4.9). According to the historical evidence and literary sources, the forms of public activities which happened in *miao-ch'eng* were not only for the duties of religious ceremony such as *Tz'u-chi* for ancestral ceremony, *Ssu-tien* for god worship, or *Hui-tien* for guild ceremony; but it was also a place for entertainment and trade deals, like a market place (*hui*) (Fig.4.10).

This completes our understanding that the location of *miao-ch'eng* forms its most important functional and cultural part in the shallowest and most connected part of the traditional settlement spatial system.

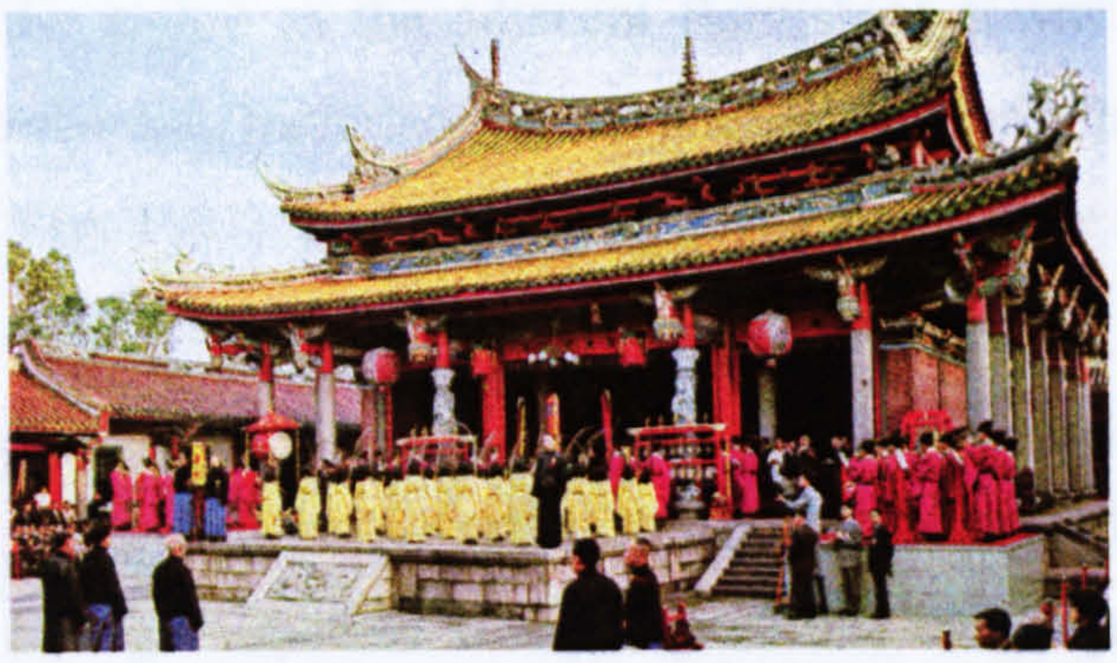


Fig.4.9: The scale of surrounding buildings and multi-functional activities characterizes the spatial quality of miao-ch'eng. Miao-ch'eng also provides significant hierarchical order for the urban fabric. (Source: *A Pictorial Narrative of Republic of China*, Bureau of Information, Taiwan, 1972)

Fig. 4.10: *Miao-ch'eng* – a place for celebration, entertainment and trade deals.
(Source: Formosa post card by Osima Co.)

- **Ramparts and gate**

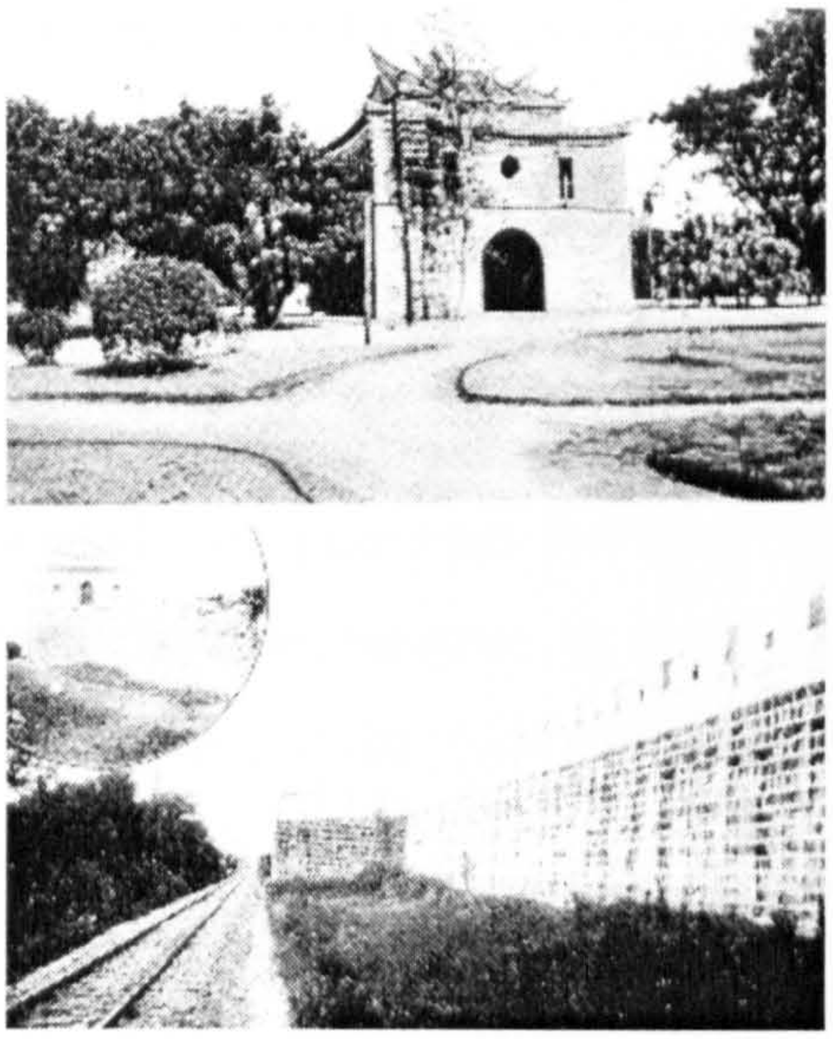


Fig.4.11: The ramparts were oriented to the cardinal direction that responded to the ideology of feng-shui principles. (Source: Ye-nan-chia-tui, 1997:203)

The other component was the inner walled city which was built at the end of nineteenth century (1882-1900). The city walls were oriented to the cardinal direction with one gate at least on each side, with an additional gate at the south wall (Fig.4.11). It conveyed an ideology that it was a connection between heaven and earth. It demarcated its territory with its defensive measures as well as for the purpose of power and business that resulted in a dramatic change of the whole city pattern. Indeed, the traditional development of the Chinese walled city in history was primarily determined by two major factors. 'Politics' was first crucial factor while 'military defence' was the second consideration. In contrast, the consideration of business and transportation was only a minor and subordinate factor in the development process of the Chinese city (Chen, Cheng-Sheng, 1983:72). Indeed, this was the case of the Taipei walled city when the Ch'ing authorities decided to establish the prefectural centre in the Meng-chia countryside after the commencement of provincial status in 1886. It was because they were aware of the prosperity of the region as the adjacent flourishing towns like Meng-chia and Ta-tao-ch'eng provided an urbanlike hinterland to substantially support the construction of the walled city (Lamley, 1977; Yep, 1991). Besides, the prime location of the area in Taipei Basin was a political correctness at that time to serve as a representation of central authority in the northern region of Taiwan.

Before the establishment of the walled city, the settlements of Meng-chia and Tai-tao-ch'eng seemed to be so isolated that there was lack of direct and convenient linkage between them. However, after the construction of the inner walled city, these two traditional quarters were integrated with the walled city, as shown in the global integration axial map (RAn, Fig.4.5A). However, the spatial structure of the walled city itself was relatively less integrated in terms of local integration (RA3, Fig.4.5B) and indicated little deformation in the grid structure in comparison with the other two quarters. A principal continuous route was constructed from the north of Ta-tao-cheng quarter linkage to the south of Meng-chia quarter

through the Westgate of the inner walled city. However, the scenery along the route was wilderness with only some spots of public cemeteries, ditches, streams and irrigation lands.

The development of the walled city transformed the spatial landscape of Taipei city which eventually formed the triangular spatial structure of the traditional city in Taipei Basin. From the perspective of global spatial relationship, the functional and spatial importance of the walled city generated the most integrated area in comparison with the other two segregated residential settlements in the traditional city. Besides, the location of the gates occurs at the intersection of the most integrated routes connecting to the boundary of the inner walls.

Indeed, the walls were in the form of grid patterns reflecting Chinese feng-shui principles and played a vital role in the transformation of urban spatial order from an organic traditional settlement into a semi-organic spatial pattern in the late Ch'ing society.

- **Street space**

According to the axial analysis, 12 thoroughfares and main streets are identified as the most integrated lines in the statistics of Table 4.1. Most of the main streets or thoroughfares run in a north-south direction in the earliest port settlements reflecting the orientation of natural landform and responding to the functional activities as well. These main streets are the most integrated lines in the traditional settlements. They also possess the maximum values of the degree of "ringiness" in comparison with the dead ends and cul-de-sac. The results reveal that urban ringiness or permeability is strongly linked to urban street life. They also reflect a spatial logic behind the layout of the streets which imply an abstraction of the hierarchical order. This phenomenon reveals a powerful relation between the integrated main street and temple spaces in terms of their functional, economical, and cultural activities. It seems that the combination of market street and temple space is a generic type which has an overwhelming effect on the everyday life of traditional society. The street space reflects the vital diversity of the urban realm and embodies a sense of convenience for social encounter and a cultural sense of collective identity.

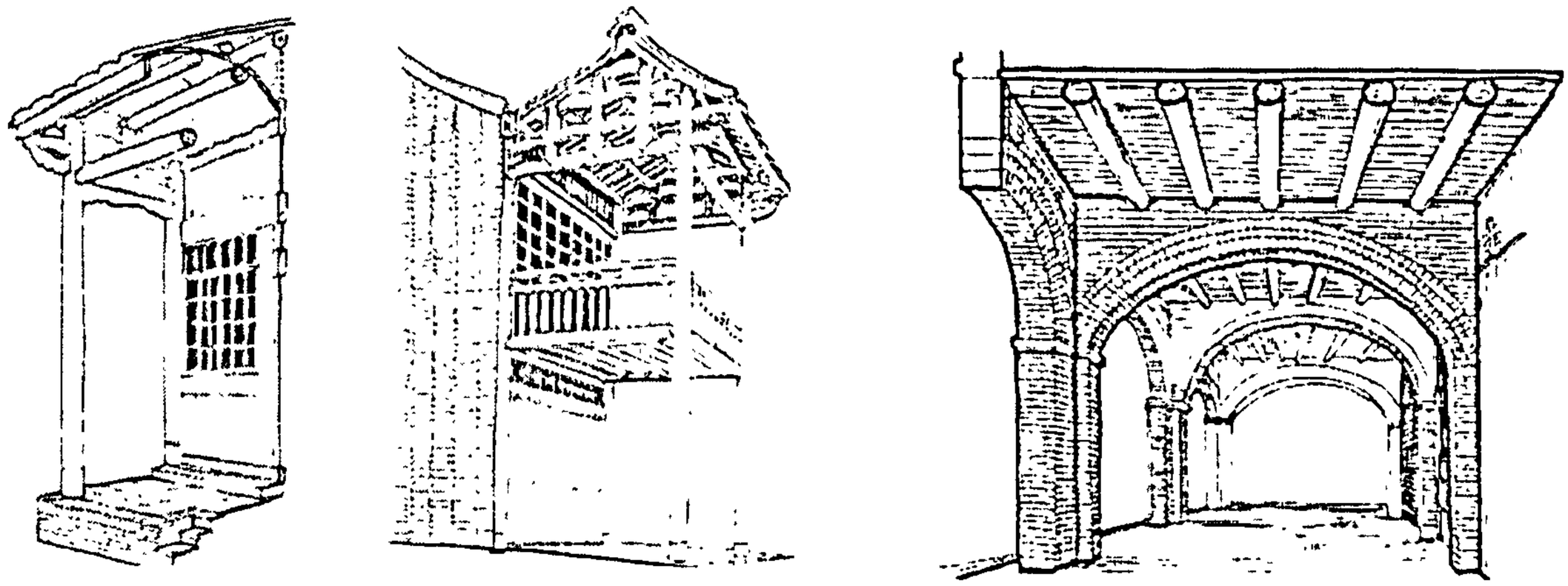


Fig.4.12: The arcade space (T'ing-tzu-ch'ao) defines the edge of traditional street with duo-functions: protecting from hot and rainy climate and attracting more customers (Sources: Lee Ch'ien-long, 1979 & Huang Wu-tah, et.al., 1997:53-56)

The traditional main street was typically flanked by continuous buildings of two storey shophouses with a wooden arcade or covered corridor (*T'ing-tzu-ch'ao*) located at the ground floor. This was an urban prototype in the traditional organic settlement. The arcade acted as a semi-public space defining the street edge and carried out two functions: to protect from hot and rainy climate, and to attract customers. (Fig.4.12) They were extensions to urban functions and supported the liveliness of urban space. The mixed-use shophouses, which enclosed the streets, were orientated towards the streets which were lively, vibrant and very busy with the trading activities of market-places or bazaars.

The axial analysis reveals that the most integrated streets are open without any barriers and accessible to anybody. The streets founded in the early settlement functioned as social living rooms. The pedestrian area was not differentiated from the street but integrated as a whole to become a vivid market place. It seemed that it was the early prototype of Pedestrian Street. The streets were encroached by informal commercial activities such as places for vendors or tentative stalls that generated a kind of informally-ordered environment, and the space became a very lively place in the traditional settlement. The traditional street did not have a regular plan form. Instead it was a meandering linear form induced by the context of natural topography that eventually created variety of small open spaces, which functioned as supplementary spaces for the street and enhanced the pluralistic patterns of street space.

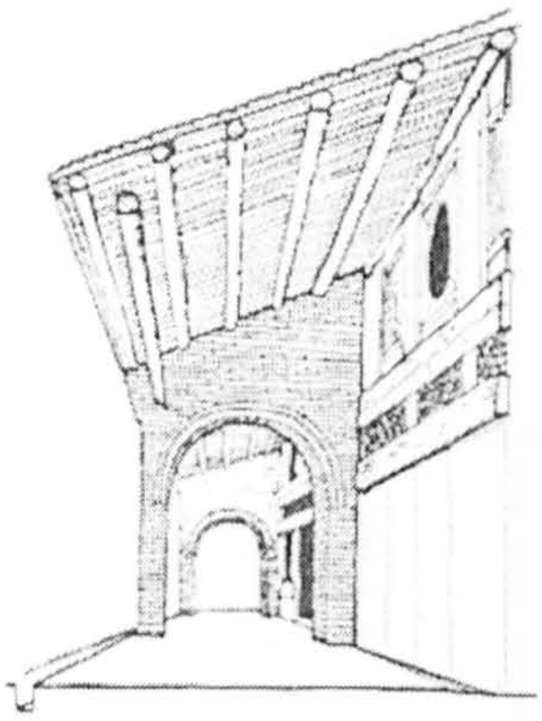


Fig.4.13: The arcade forms a transitional semi-public space demarcating between the public street and the private domain (Source: Lee Ch'ien-long, 1979)

Fig.4.14: The street space of Heng-yang Road (Source: Ye-nan-chia-tui, 1997:111)

The forming of arcade spaces (*T'ing-tzu-ch'ao*) along the main streets actually not only responded to the local climate condition for creating shade and comfort, but also reflected the life patterns and the relationship of spatial organization in the traditional immigrant settlement. As mentioned before, the two storey shophouse had a mixed use with residential and commercial building type. Basically, the first floor was a private residence while the ground floor was supposed to be the space for family business. The shophouse was typically built on narrow and long deep plot: approximately 4m x 40m. A setback was then created in front of the ground store to form a semi-public space, not as a barrier but as a transition, demarcating between the public street and the private residential domain, as well as for receiving maximum light. Thus, the activities of the street could be extended to this open and inviting semi-public space (Fig.4.13). People could enjoy their leisure activities in the arcade: chatting with their friends, sitting on the stool to watch passers-by, or resting away from the implacable sun. Besides, this spatial organization reflected that the attitude of people towards the concept of spatial sequence was akin to the traditional courtyard house that integrated with daily life operation and social organization.

Streets such as Sei-mun Street (current Heng-Yang Road) and Shin-chi Street (a section from the east of current Joi-shi miao to the west of the street between Cheung-sha Street and Han-chung Street) are examples of traditional streets with arcade space in late Ch'ing period (Huang, et.al., 1997:53) (Fig.4.14). The integrated linear informal street with arcade element carried out two functions. On the one hand, it linked the continuity of public space to private space and also filtered the public activities that took place on the street. On the other hand, it

enhanced the liveliness of street activities due to its strong visual connection that allowed people to get a sense of participation as well as to enjoy privacy.

● **Shophouse**

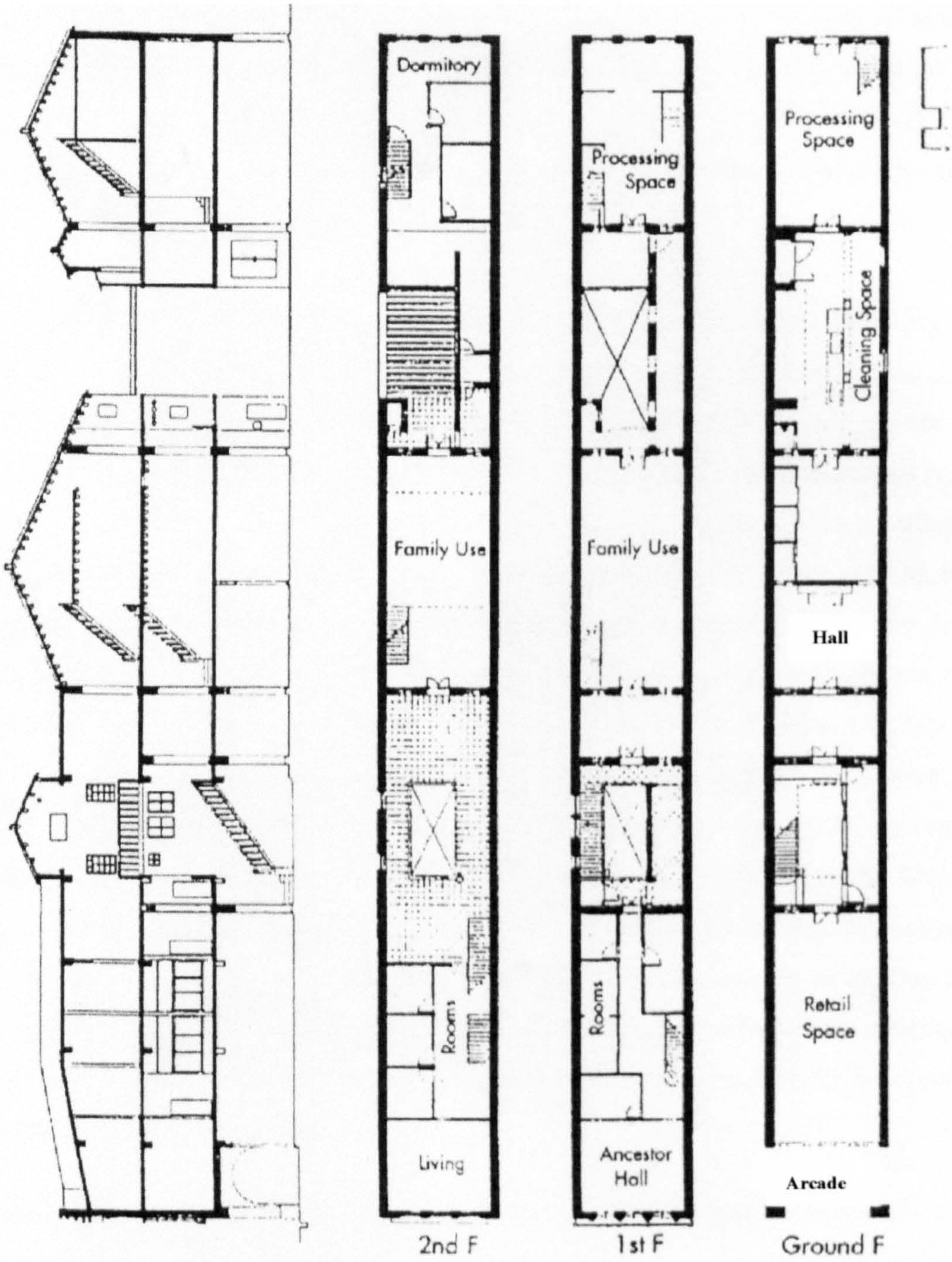


Fig.4.15: Shophouse in Tihua Street, Taipei (late Ch'ing Dynasty, c.1850-1895) (Source: Hwang, 1995)

Apart from the ideology of feng-shui, the orientations of these traditional streets with the formation of T'ing-tzu-ch'ao (arcade) were deeply affected by social activities and spatial organization of particular built form, shophouse. Indeed, they maintained the symbiotic relationship that reflected the social life of early traditional settlements. From the axial analysis, the local integration map (Fig.4.5B) has demonstrated the location of local cores which not only argue their association with the densities of movement and built form (Hillier, 1996:167-170), but these cores also deeply involve with the life activities generated from the spatial organization of this built form.

For example, the spatial organization of the long shophouse in Tihua Street (Fig.4.15) strongly backs the argument of social activity and hierarchy within the family. The spatial organization of shophouse has unique features with the arrangement of public and private daily activities that basically divide the narrow and deep form of shophouse into three *chins* (spatial sections). First, the front *chin* is normally for public life. It is longer in length than the others for business purpose. The room for business guests is arranged behind the shop, and the host's room is basically set in this chin for direct business control. The warehouse on the first floor is located above the shop, with a void above the centre of the shop. Beyond the shop one enters the first courtyard space which demarcates the private daily life such as cooking activities from the public. Second, the intermediate chin serves for both staff and children since there is no third chin. This intermediate chin is regarded as interior space and normally is reserved for family members, and is the space for the worship of the gods of the family and of the ancestors. Besides, the respected older generation of the family resides in this chin. Third, the backyard is at the back border of the shophouse which is used as the service area and for circulation to the back alley, and also for domestic stock. The condition of such spatial organization reflects how the street life is activated and those areas indicated in the axial maps represent the local cores of the early settlement in Ch'ing Dynasty.

4.3.4. Hidden rules behind the formation of urban space in traditional settlements

In sum, the formation of urban spaces in the early river-port towns typically had the following rules:

1. Shophouse was often built along the main street. The orientation of such streets always responded to the natural topography such as running parallel to the river and perpendicular to

the highest point of the mountain, thus reflecting the *feng-shui* principles. The linear informal main streets were the major skeletons of river-port towns and were the most permeable and connected spaces in the traditional organic settlement.

2. The significant spatial elements such as shrines and temples were often interlocked with the main street spaces and created the pluralistic small pocket open spaces such as miao-ch'eng (square) at the junctions or intersections of the streets. As a result, these small open spaces enriched the rhythm and scale of urban space and intensified the vivid daily life activities of the street. The combination of market street and temple space is a generic type which is a cultural form of urban space in the traditional society.
3. Besides, daily life activities were usually oriented towards the main road which formed a central social communal space for the traditional society.

4.4 The Second Change in Spatial Morphology: a colonization approach by the Japanese (1895-1945)

It was in this period that the urban landscape of the city was changed dramatically in terms of the urban spatial system and the setting of urban community quarters. The total population was 214,907 in 1925, and finally reached to 335,397 in 1945. During the whole period of colonization, the population increased almost seven times from the 46,710 city residents in 1895. Obviously, land was limited for further expansion of spatial development in those old quarters, but the pressure on the growth of the city was intolerable due to such a rapid increase in population. In such conditions, built land was expanded from 273 hectares in 1895 to 677 hectares in 1925, and finally increased to 6,698.72 hectares in 1945. (See Table 4.1.)

Given these circumstances, the attitude of the Japanese towards the spatial development of the colonial island was different from that of the Chinese. The Japanese approached urban development with a long-term vision and an interest in strict community control. The Principal planner-in-charge Dr. Goto brought about 'uniformity and consolidation' in every level of civic and community life. He also introduced 'neighbourhood associations' for all city people, which became a factor in the planning of urban spatial structure, such as the demarcation of quarters between the Japanese residents and local Taiwanese (Kerr, 1973:62).

A new city planning unit was set up to control the spatial expansion of the colony. For example, the Temporary City Improvement Committee initially established in 1898, soon became a permanent planning bureau, and a first master plan for Taipei was drafted to provide for a population of 150,000. New building codes were also enforced to clear the way for much solid new construction (Kerr, 1973:75, & Huang, 1997). In addition, the Japanese official proposed major port developments, vast irrigation works and new industries.

All these new changes not only generated a vast transformation of the city landscape of urban space, but also affected the entire traditional structure of community life. The logic behind these changes in the spatial structure of the urban grid is explored in the ensuing section. The space syntax model is used to investigate how the process of driving a number of new additional lines through the traditional urban structure of the old city can affect its spatial properties and patterns.

4.4.1: A morphological analysis: the Japanese intervention on urban space

The results of the spatial analysis of the colonial city at the early stage in 1925 and at the later stage in 1945 indicate that there are unexpected and dramatic changes to the spatial configurations. A comparison of spatial patterns of these stages superimposed over the Ch'ing period produce some interesting facts. The removal of city walls and the infill settlements at the west of the old city wall, and the expansion of residential quarters beyond the other sides of the old walls have brought about tremendous changes to the patterns of integration and connectivity in the city.

- **Properties of 1925 Taipei**

The spatial context of the city in 1925 was dramatically changed with expansion to the east of the city (Fig.4.16a). The translation of convex map from the urban spatial structure of the city reveals the open space structure of the city. (Fig.4.16b) The global axial map with radius-n and the scattergrams reflects the new boulevards formed as common bases to absorb most of the lines from the surrounding areas and integrate the city as a whole. The axial map also shows that new long and straight boulevards clearly demarcate five distinguishable quarters and create many new intersections compared with the old map in 1895 (Fig.4.17a). Moreover,

one of the most integrated lines shifts to the new street continuing from the old eastern wall of the inner walled city, which was visually and symbolically connecting to the sacred place of the Japanese shrine located at the current site of the Grand Hotel. It signified a symbolic meaning of spatial connection and worship that was related to the cosmic order of the Japanese Emperor. The location of the shrine reflects the intention underlying the Japanese organization of the city, namely their need to control the colonial society.

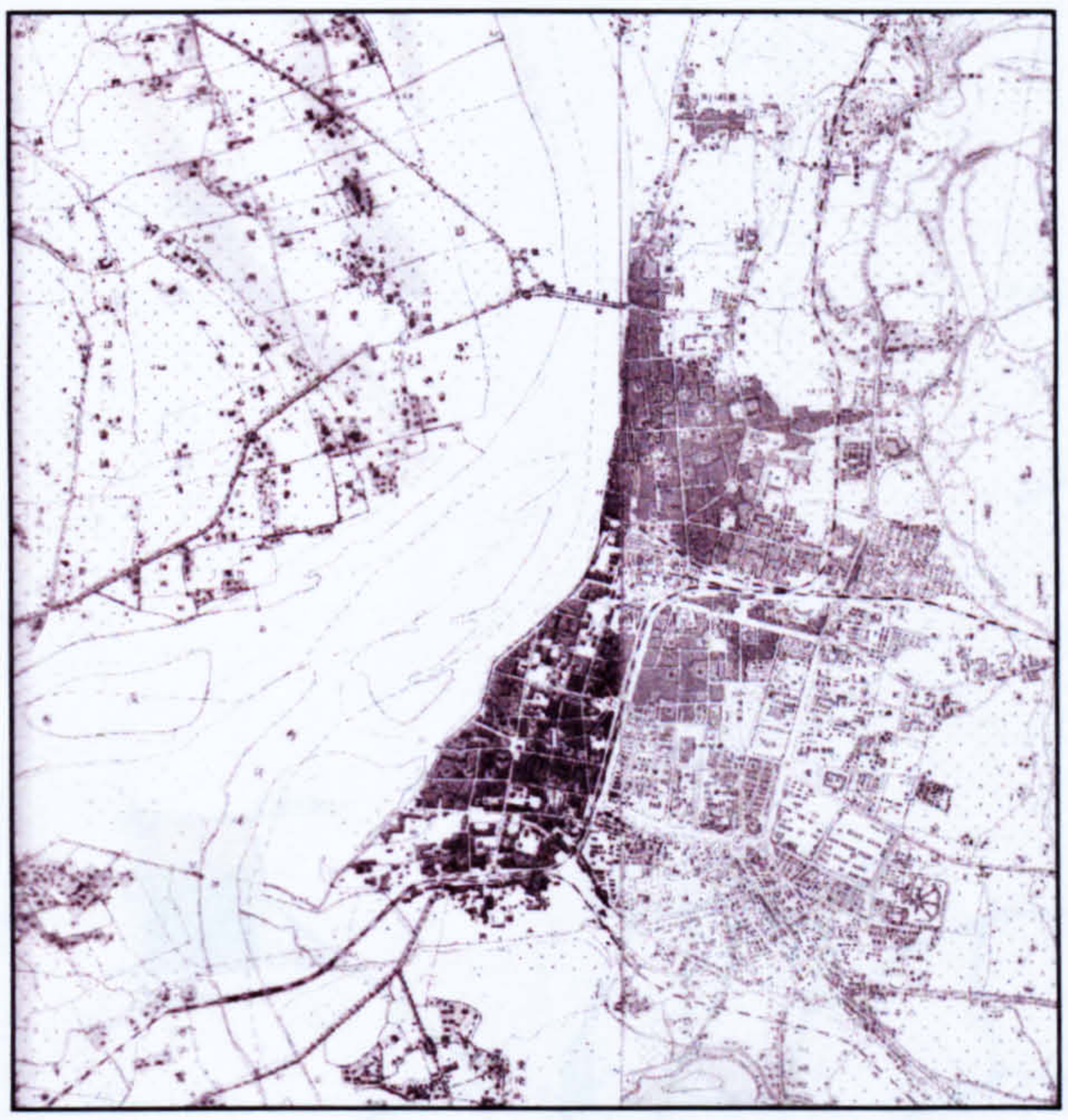


Fig.4.16a: The spatial context of Taipei in 1925

Fig.4.16b: Transcription of open space structure into convex map

This sudden change of integration transforms the entire spatial characteristics of the city. The intensity of the degree of "integration" in the cores and the main routes of the old quarters at the Ch'ing period seems to vanish to a certain extent as a result of spatial transformation. Instead new integration cores are generated mainly along the new grand boulevards, which are transformed from the old city walls. Obviously, the main commercial activities move from the squares (miao-ch'eng) or old market places to the edge of the new boulevards (Chen Chang-sui, 1989:61-101; Hsui Yue-chien, 1993: 70-81). Seemingly, there are also displacements of spatial segregation from the old quarters to the new grid patterns of residential quarters, for example, the new Japanese grid quarter at the upper right corner of the city edge.

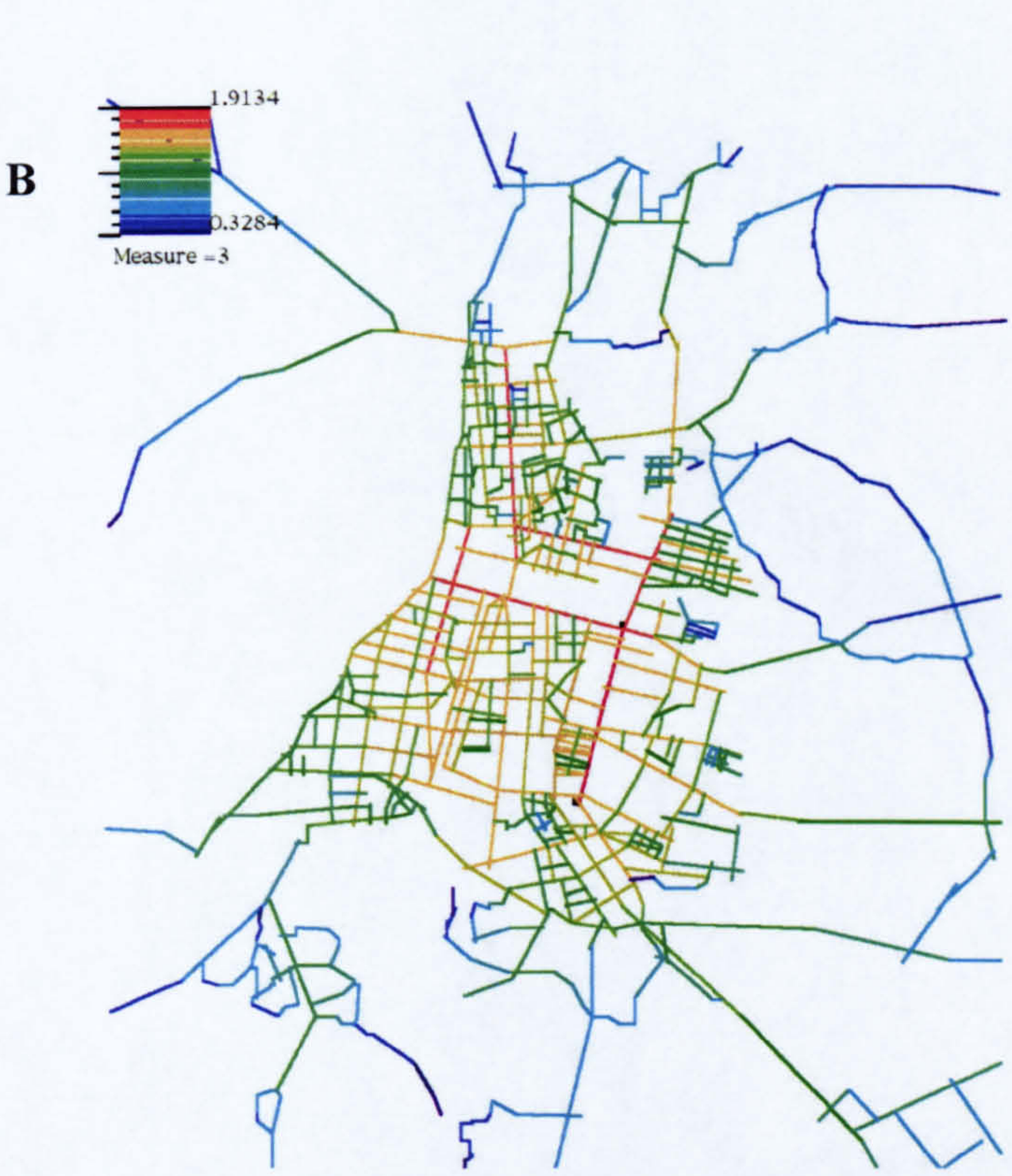
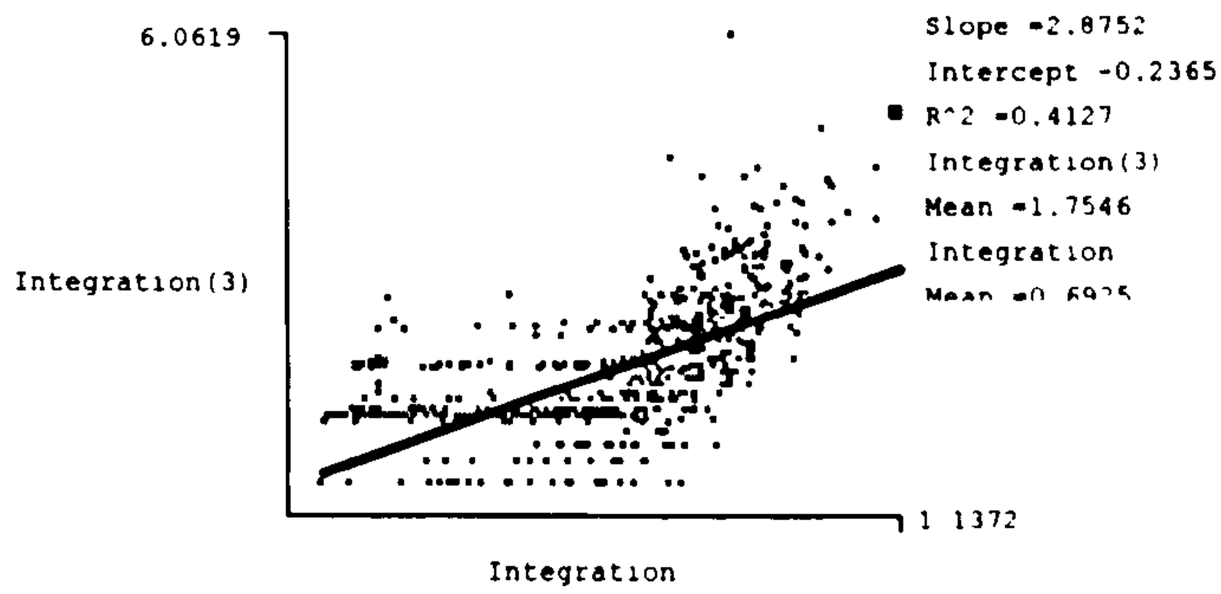
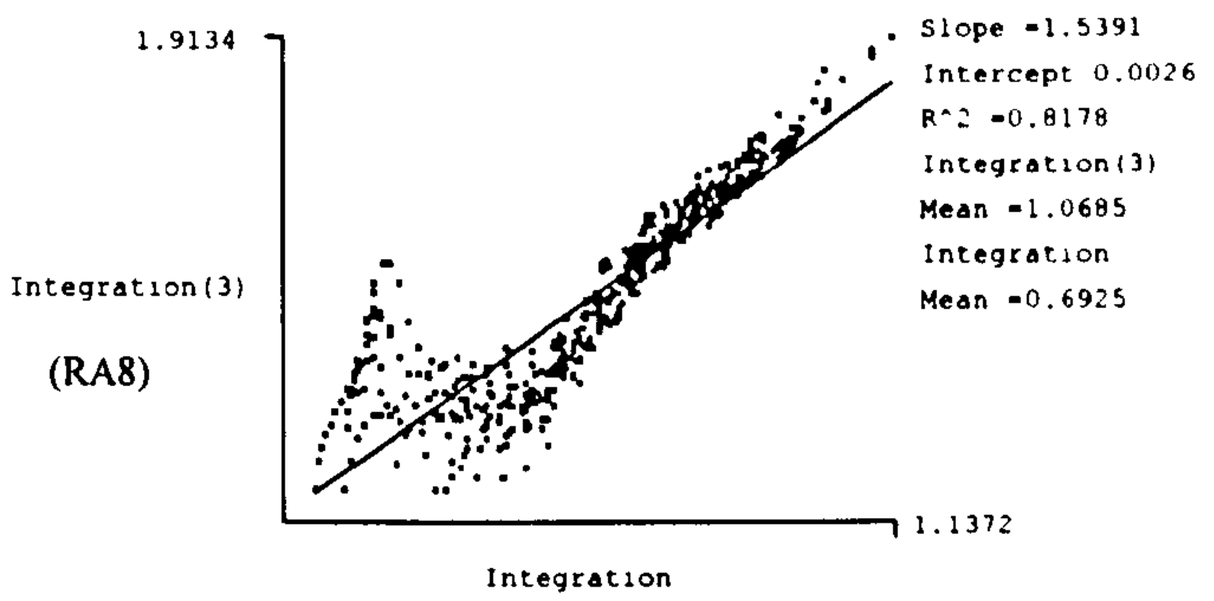


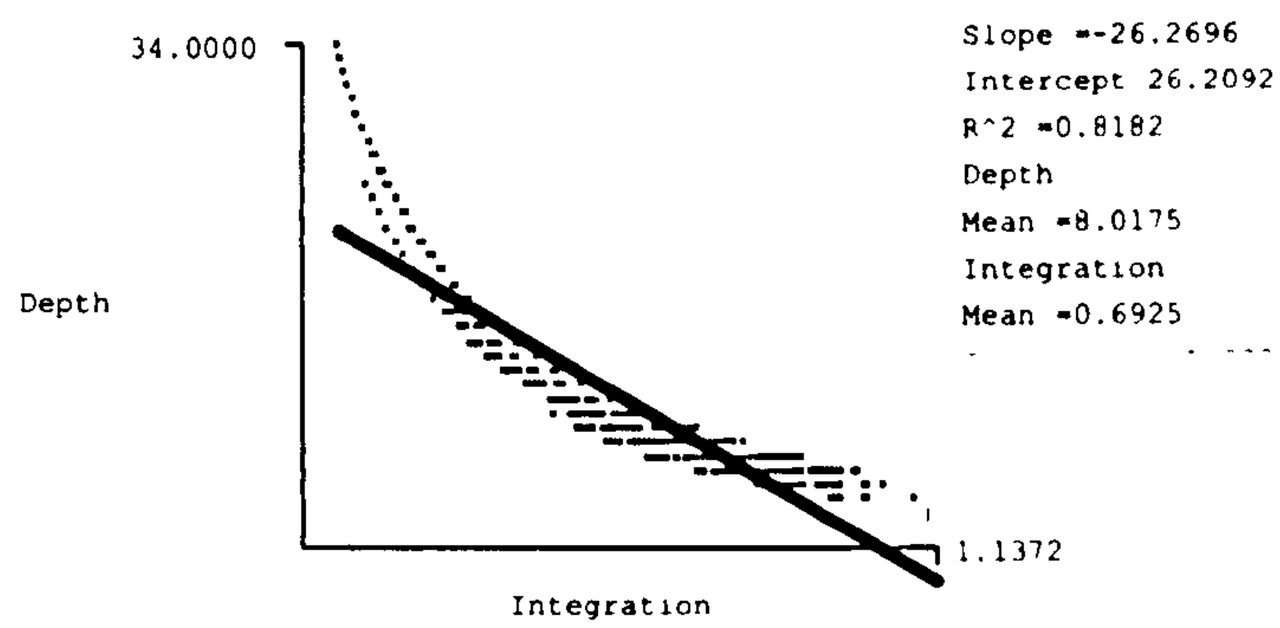
Fig.4.17a: Axial analysis of (A) Global integration (RAn) and (B) Local integration (RA3 rad 8) of Taipei in 1925



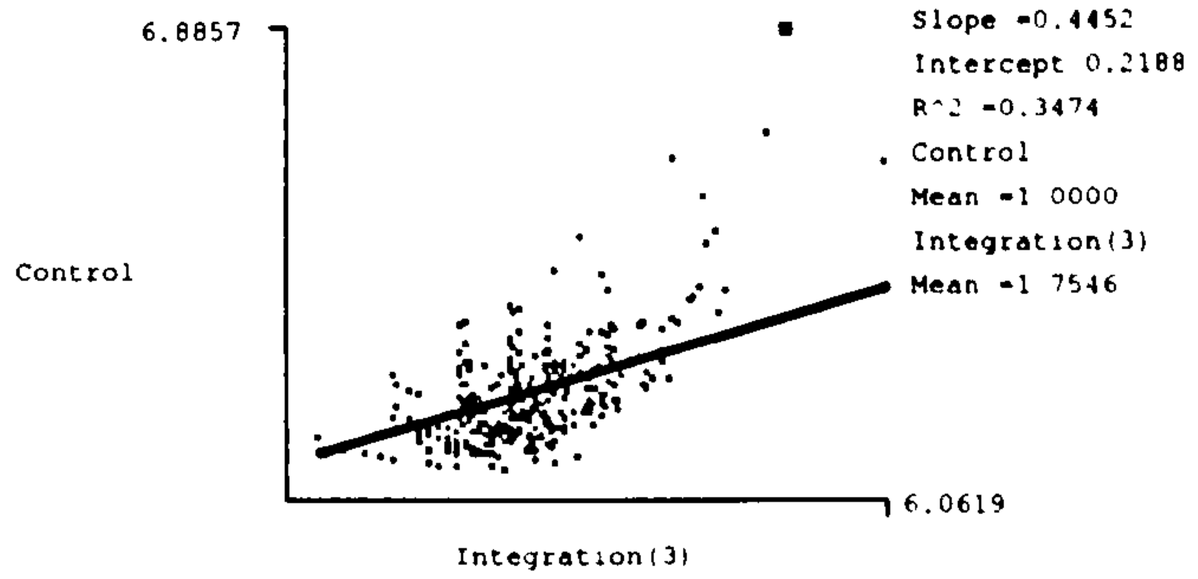
(1) The correlation between local integration (radius 3) and global integration (Rad=n) within the context of Taipei in 1925



(2) The correlation between local integration (radius=8) and global integration within the context of Taipei in 1925

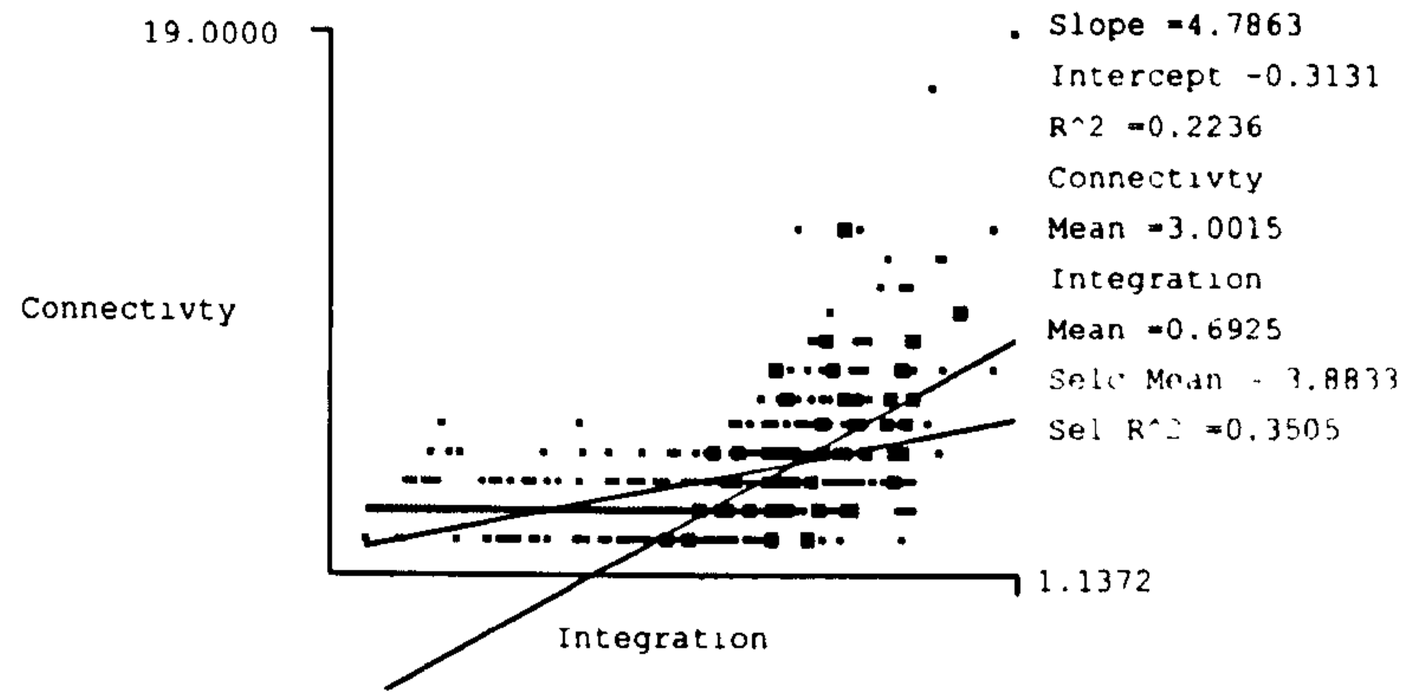


(3) The correlation between depth and global integration of Taipei in 1925

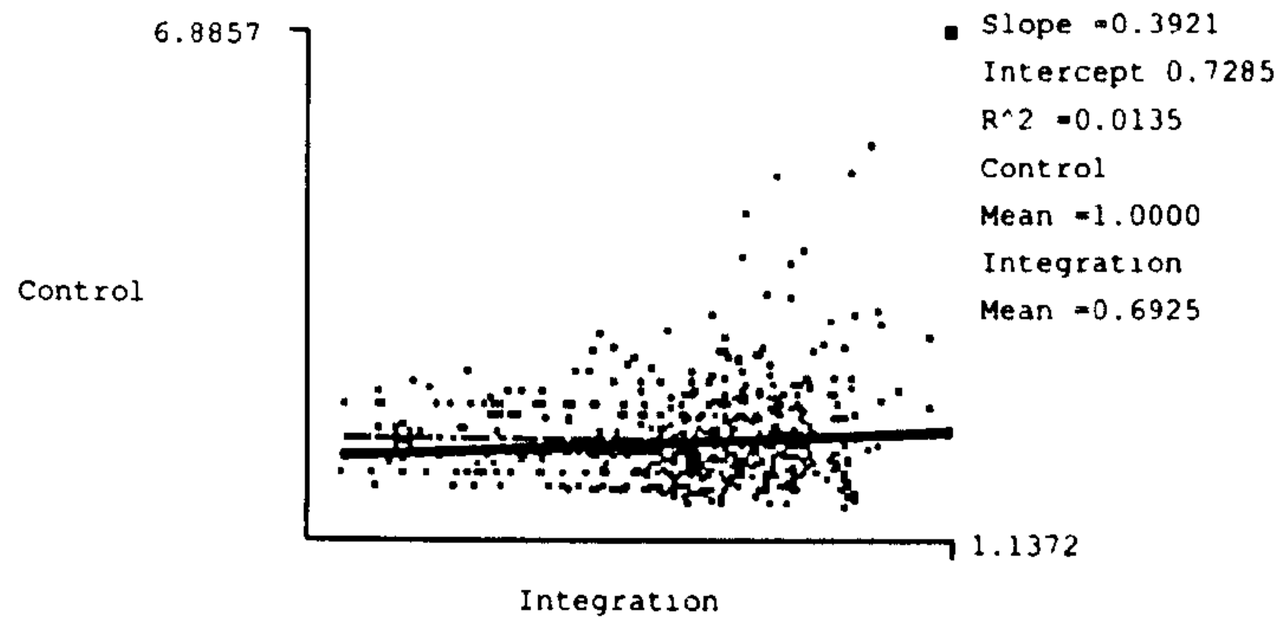


(4) The correlation between control and local integration of Taipei in 1925

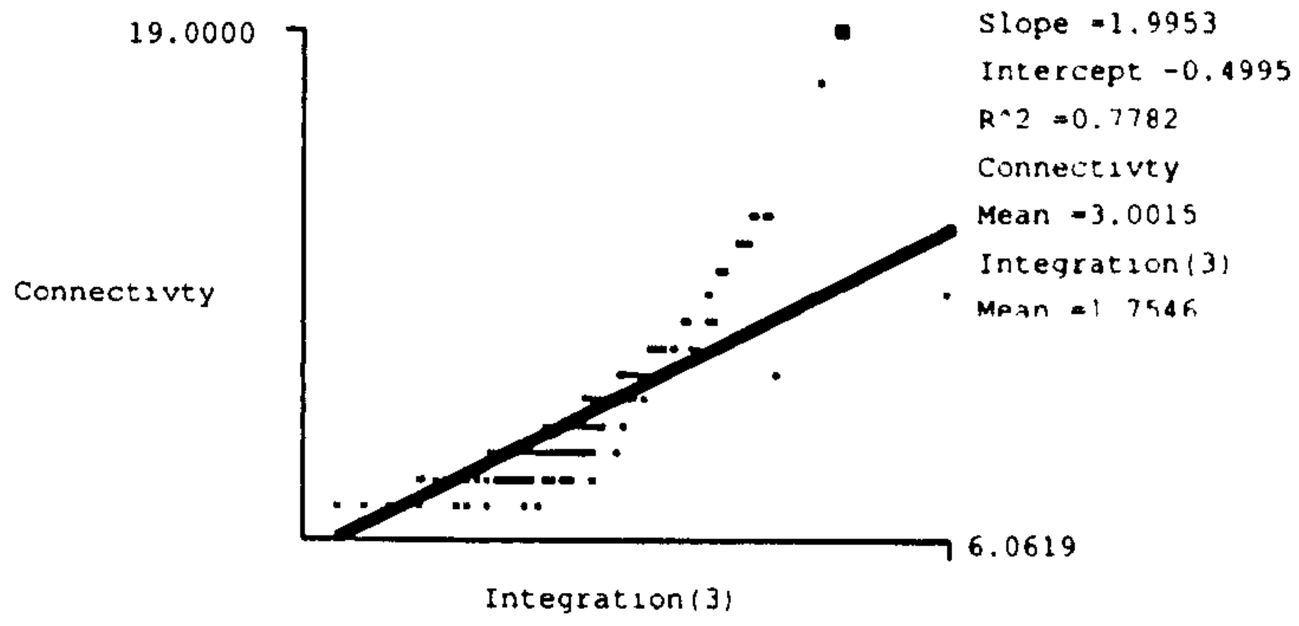
Fig.4.17b-1: Scattergrams of Taipei in 1925



(5) The correlation between connectivity and global integration of Taipei in 1925



(6) The correlation between control and global integration (rad=n) of Taipei in 1925



(7) The correlation between connectivity and local integration (rad=3) of Taipei in 1925

Fig.4.17b-2: Scattergrams of Taipei in 1925

The value of the degree of convex articulation (0.032) shows the asynchronous urban patterns of the city in 1925. The fact that the degree of convex deformation is low (0.6262) and that of grid convexity high (1.7159) points to the city in 1925 having both geometrical and angular characteristics in its urban structure (See table 4.2). This result indeed reflects the co-existence of two major different patterns spread in five quarters which are formed at different periods in history (Fig.4.18).

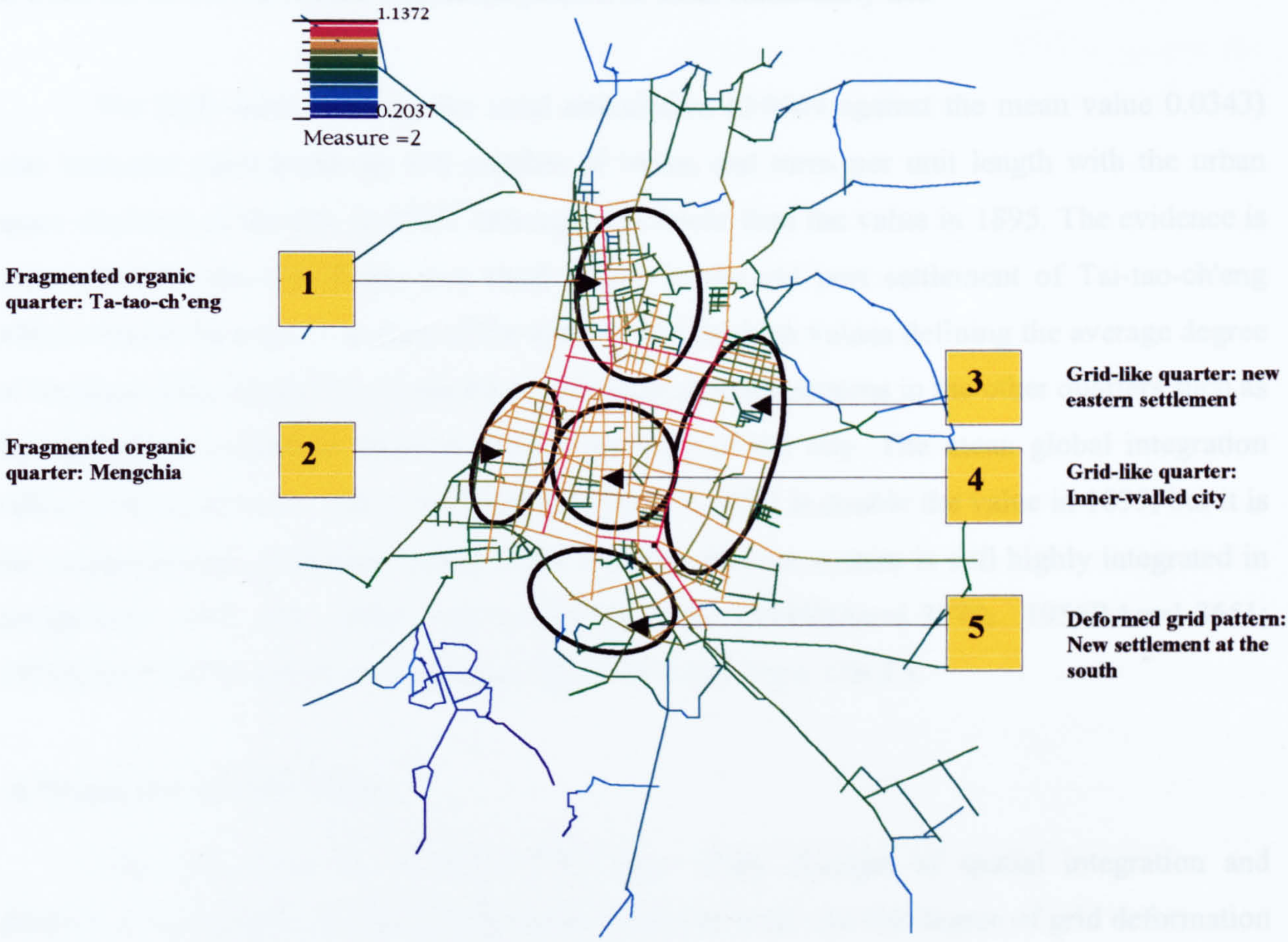


Fig.4.18: The map shows the co-existence of two major different spatial patterns: grid-like and fragmented organic layout, spread in five quarters.

Obviously, the spaces within the inner walled city and the areas to the west and east of the walls are transformed into grid patterns as a result of social reform implemented by the colonial authority. Historical documents show that these patterns were related to a concept of community control, which is based on the revised "pao-chia" system[56] introduced by the Japanese colonial government. All town residents were required to register with neighbourhood associations and community society (Kerr, 1974:59). The change of social structure destroyed, to a certain extent, the entire traditional pattern of local community life.

The high value defining the axial articulation (0.0469 against the mean value 0.0343) also indicates more break-up and number of twists and turns per unit length with the urban space structure of the city in 1925, although it is lower than the value in 1895. The evidence is concretized by the curvilinear and short streets in the old port settlement of Tai-tao-ch'eng which reveals the organic texture of the quarter. But the high values defining the average degree of ringiness also suggest the existence of geometrical street patterns in the other quarters such as the segregated residential quarters around the edge of the city. The mean global integration value of the axial lines in the spatial system (RAn=0.6925) is double the value in 1895, but it is the second lowest integration value, which suggests that the system is still highly integrated in comparison with the other stages of the city (1945RAn=1.3778; 1956RAn=1.3651; 1977RAn=1.3439, see the scattergrams Fig.4.17b-1 and Fig 4.17b-2).

- **Properties of 1945 Taipei**

The axial maps of Taipei in 1945 show sharp changes of spatial integration and structures regarding the location of the most integrated cores and the degree of grid deformation in comparison with the early stage of urban spatial patterns in 1925. The global axial map indicates the most integrated line shifting to the new boulevard, which is the present Chung-hsiao West Road and the first section of Chung-hsiao East Road extending from the location of the north wall of the old inner walled city. This new boulevard absorbs most of the lines and also creates many intersections between the lines from the north section and south section of the city (Fig.4.20). Besides, two integration cores are formed instead of one main

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[56] *Pao-chia* system was a traditional Chinese device for local village convenience rather than an effective central government agency or control administration.

core in 1895. As well in 1925 one of them was located at the east corner embedded with the most integrated line at the centre of the city. The other integration core lies at the quarter to the west of the old city wall known now as Western District or Hsimenting (Fig.4.19-d).

The most integrated line along the east-west main street makes up the principal axis with long visual view that bisects the city into two major sectors and cuts across with many continuous lines. The low values of axial articulation do indicate the existence of these continuous linear street patterns in comparison with the previous stages (0.0314 against the mean value 0.0343 and compared with the values in both years of 1895 and 1925). The area also reflects less break-up of urban space and a more synchronous nature in the urban pattern. The high values of the degree of grid convexity (1.5033 against the mean value 1.2242) and the low value of convex deformation (0.7090 against the mean value 1.1330) imply the spatial character of grid-like, regular, axial pattern in 1945's Taipei city (Fig.4.19-c).

Besides, the values of axial ringiness (0.5558 against the mean value 0.4419) and convex ringiness (0.7078 against the mean value 0.5748) suggest that there are no or fewer bends or curves in the open space structure in comparison with the other stages. In terms of the location, the most integrated cores seem to reside around the centre of the city, as an inward oriented magnet linking all accesses to the edge of the city, which means to maximize depth gain but minimize the difference between the lines (Hillier, 1996:290). The segregated spaces of new grid residential quarters form a band around the edge of the city. Lastly, the mean integration value (1.3778) of Taipei in 1945 is the highest and this reflects lower integration and shows the existence of a deep or segregated city pattern in comparison with the other stages of the city. Besides, the axial map of local integration shows the mean integration value (RA5=1.8971) is higher in comparison with the values in 1925 (RA8=1.0685) and 1895 (RA14=0.7042), which reflects the integration cores having more scatter patterns rather than concentrated forms in local areas than in traditional settlements (Fig.4.21 & 4.22).

By comparing the axial maps of 1945 to 1925, the mean value of integration rises to 1.3778 from 0.6925 for the urban structure of the city (and also compared with 0.3403 for the traditional settlements in 1895). At the same time, the difference between the most integrated line and the most segregated line increases to 1.7294 (2.4852-0.7558) compared with 0.9335

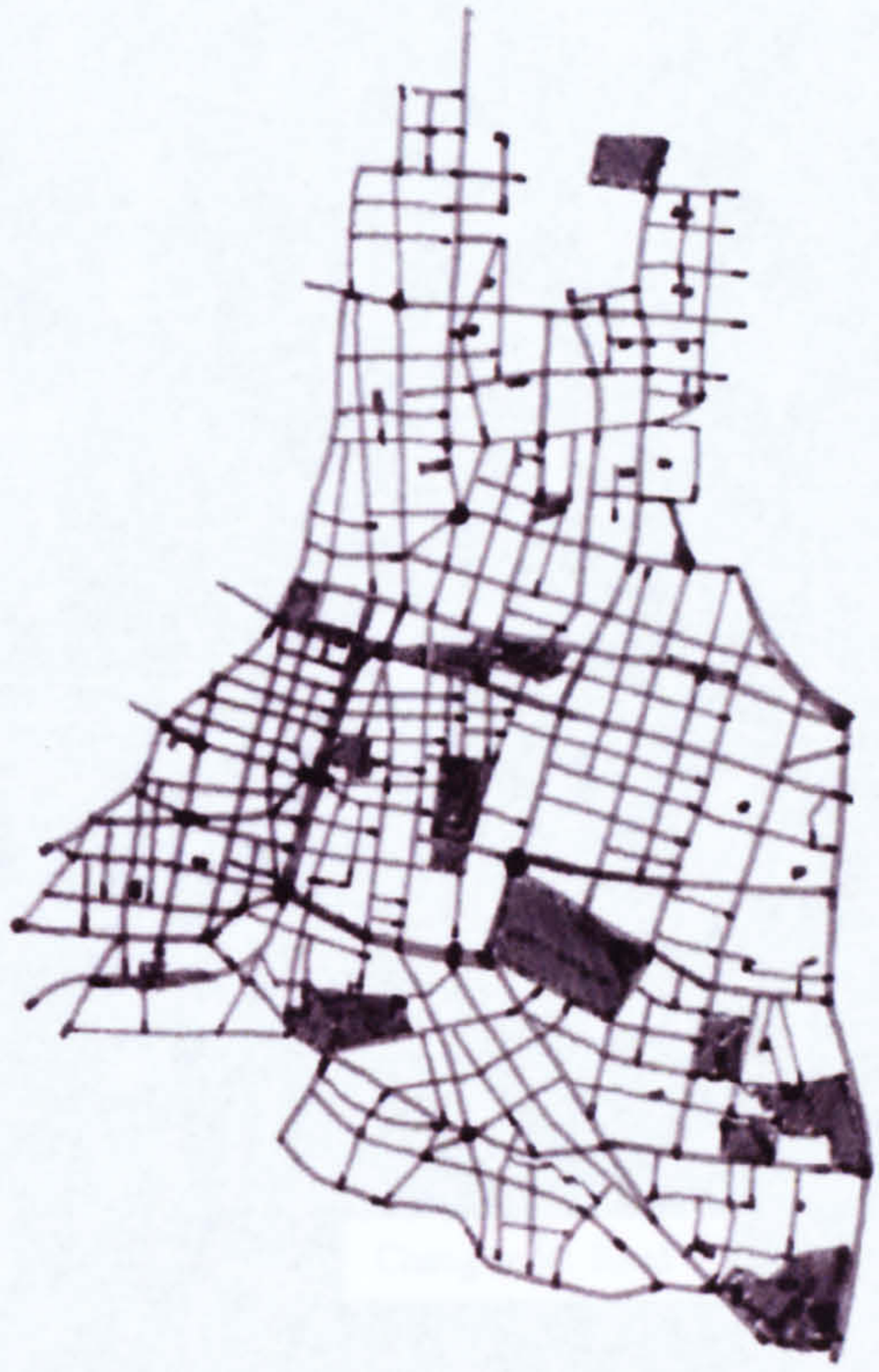
(1.1372-0.2037) in 1925, and even the smallest value 0.2864 (0.4857-0.1993) in 1895. (See table 4.1.) The values are intriguing and reveal some very interesting facts. The traditional settlement or less expanded city has more integrity on the distribution of integration, and the difference indicates clearly the further extension of the city and more of the city becomes less integrated as a result.

4.4.2 Specific characteristics of colonial urban space and society in the Japanese era (1895-1945)

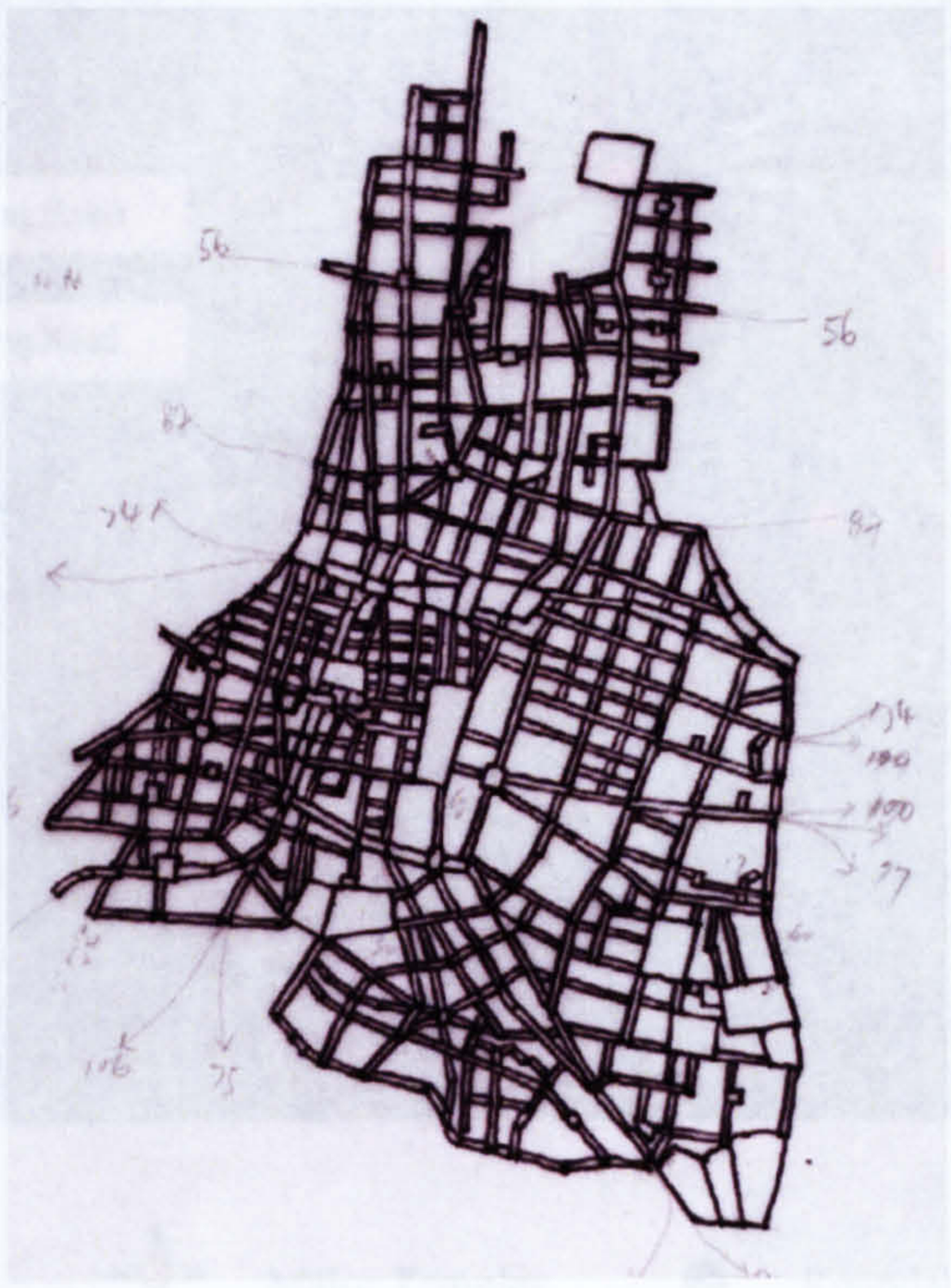
The Taipei walled city seemed to be a legacy for Japan regarding its outstanding military and political strategic position in the island. Thus, when the Japanese took possession of Taiwan in 1895, they realized the importance of this walled city, which remained as the official government place in Taiwan and represented the central power of the colonial government. The results of the morphological analysis have illustrated the spatial logic behind the patterns of colonial urban spaces, but a further investigation of the historical socio-culture activities and policy aspects will provide a fuller picture of the characteristics of urban space in the colonial society.

When the Japanese took over the island, they started to carry out city-wide reform for the purpose of modernization as well as social control. First, they changed the Taipei Fu into Taipei Hsien (county) and subsequently Taipei Chow, and merged Meng-chia, Ta-tao-cheng, Chennei (inner city) and Tachianeipo, a total area of 18.65 square kilometres, into an administrative district called Taipei Ting, dividing all its populace into 155 street residences (Hsui, Yue-chien, 1993). In 1897, a Taipei City Planning Committee was formally established under the jurisdiction of the Taipei Chow - and lasted until October 1920 - to embark on the implementation of the city planning programs. The city area was then expanded to a total of 677 hectare in 1925 and the population of the city was projected to increase from 150,000 to 600,000 people (Kerr, 1973; Chen, 1951).

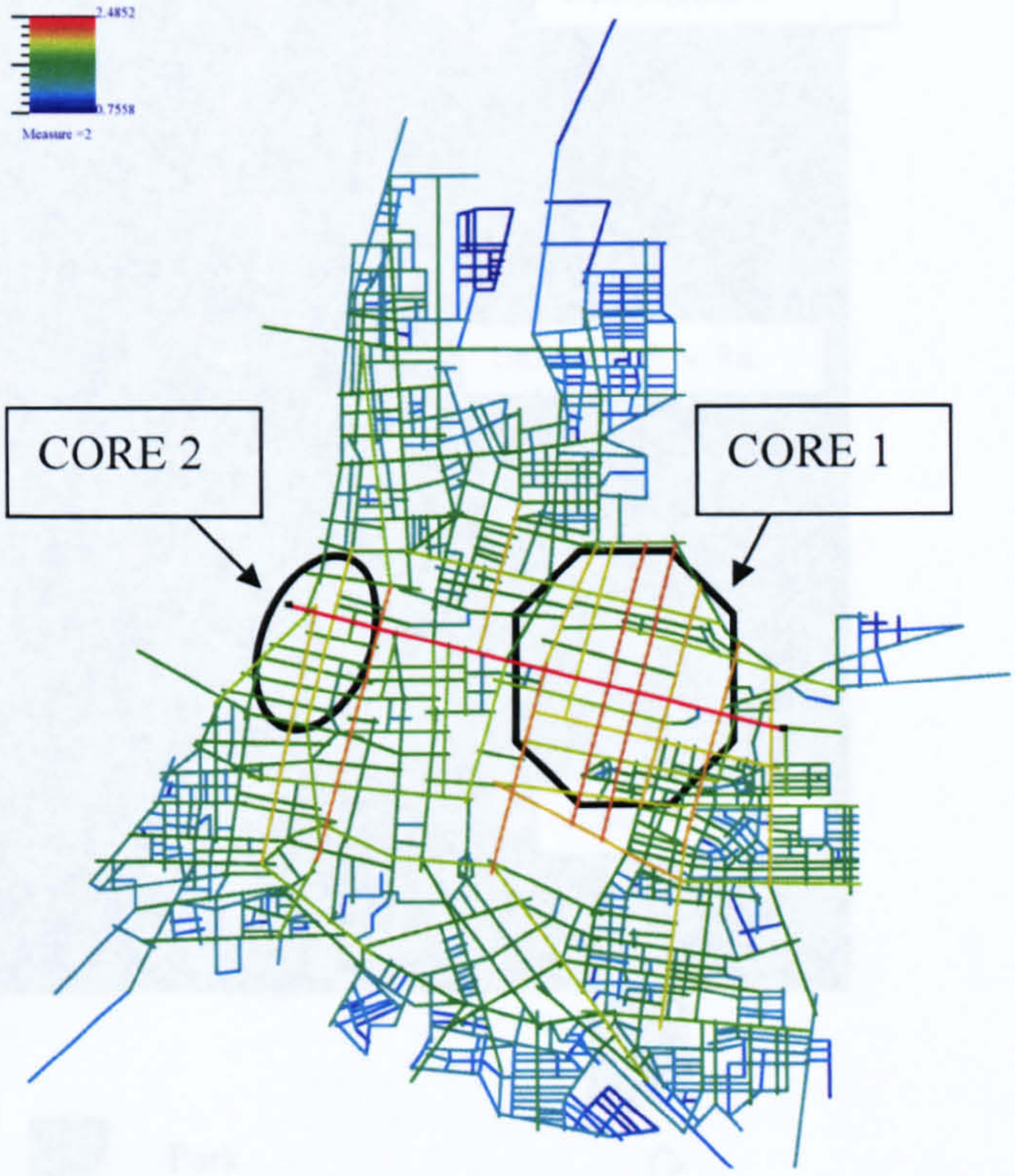
a. Urban spatial structure of Taipei in 1945



b. Open space structure of the city in1945



c. Transcription of open space structure into convex map



d. Spatial structure of the city with two integration cores in 1945

Fig.4.19: Spatial analysis of Taipei in 1945

Fig.4.20: Indication of the most integrated line and major urban forms in the urban layout of Taipei in 1945

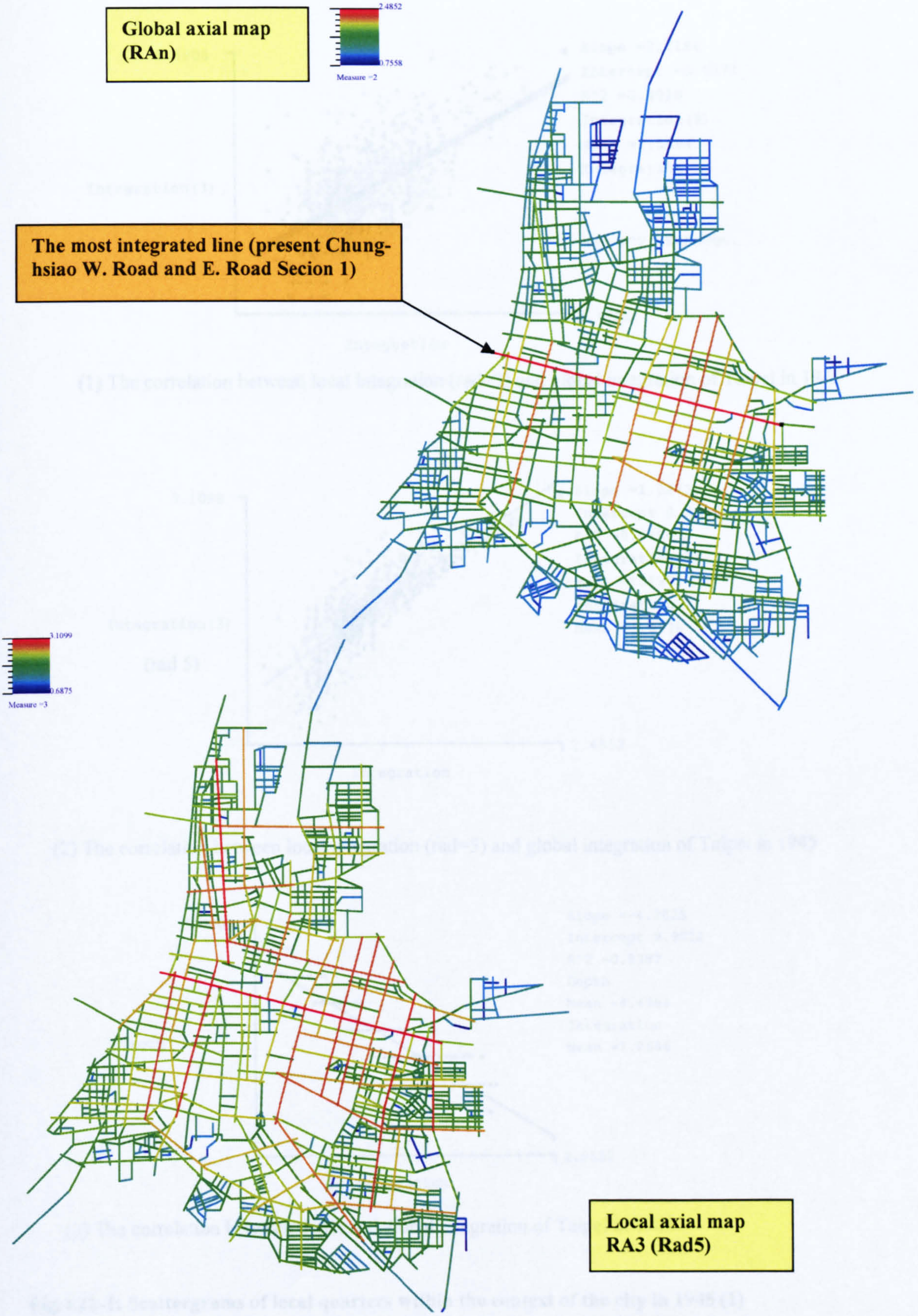
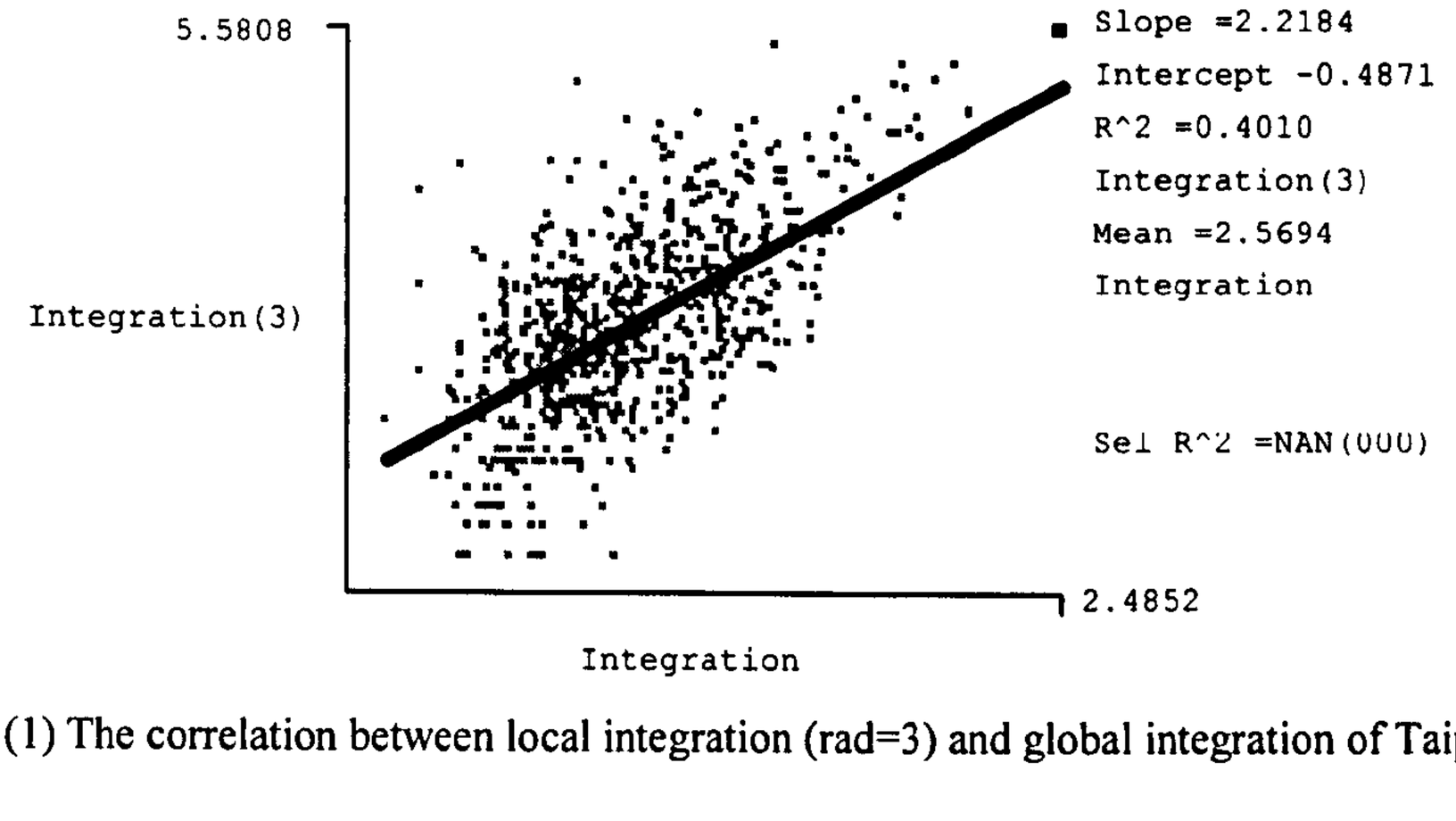
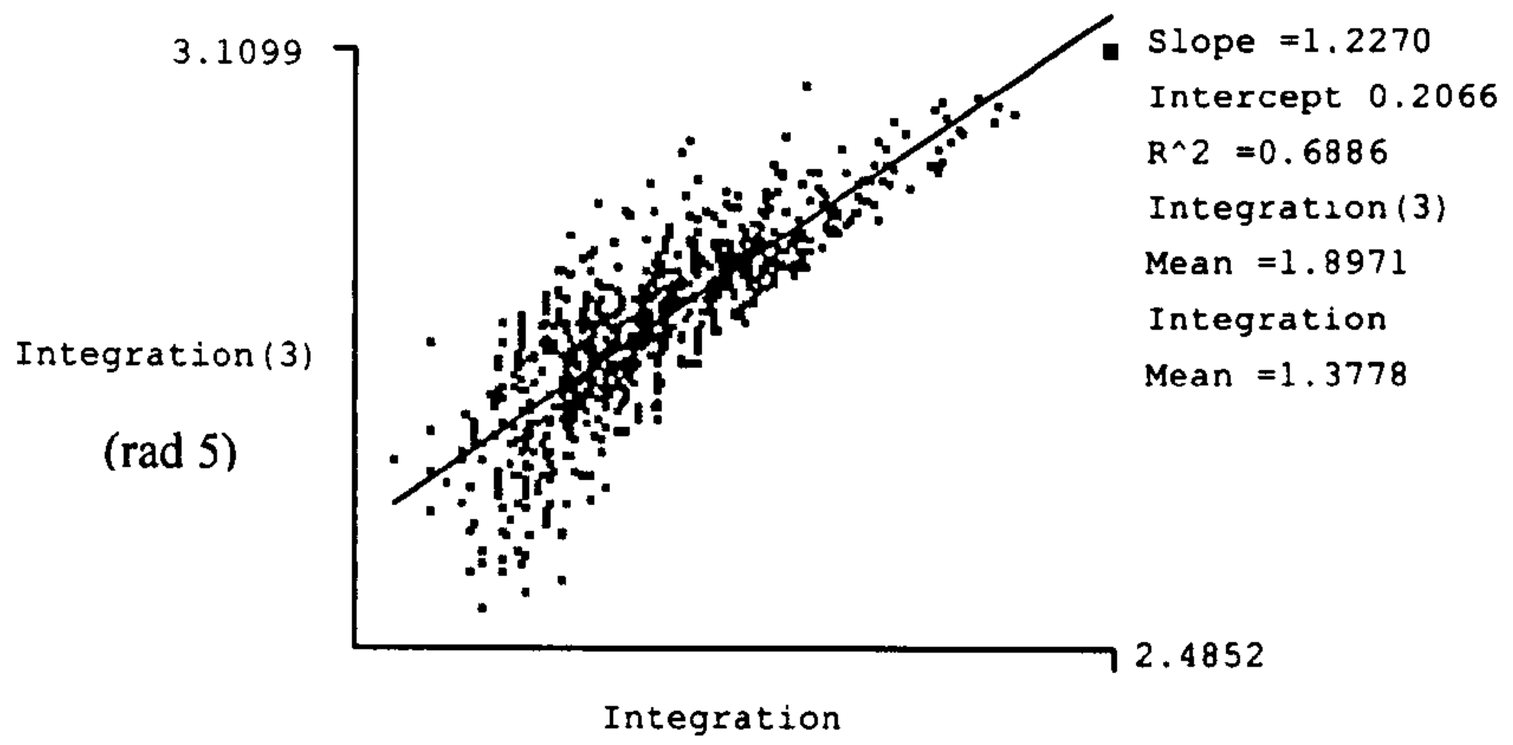


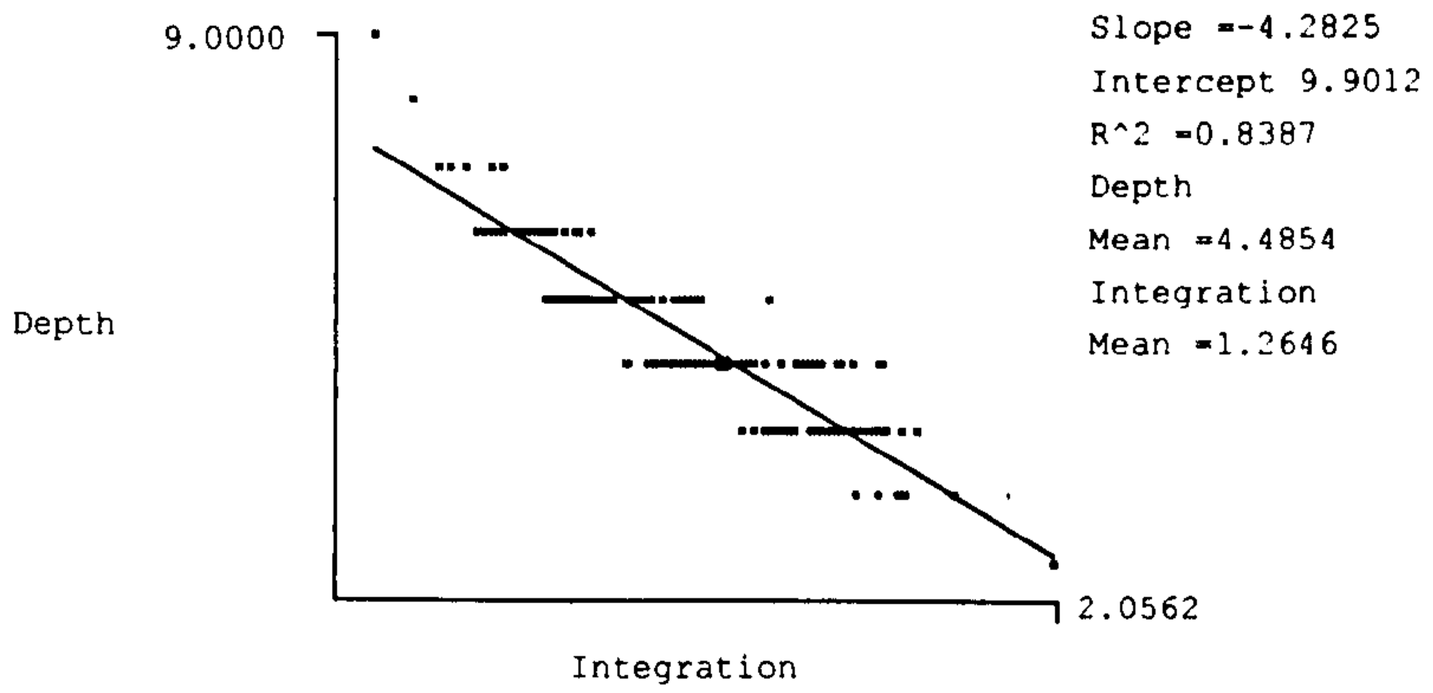
Fig.4.21: Global integration (RAn) & Local integration axial map (RA3 rad5) of Taipei in 1945



(1) The correlation between local integration (rad=3) and global integration of Taipei in 1945

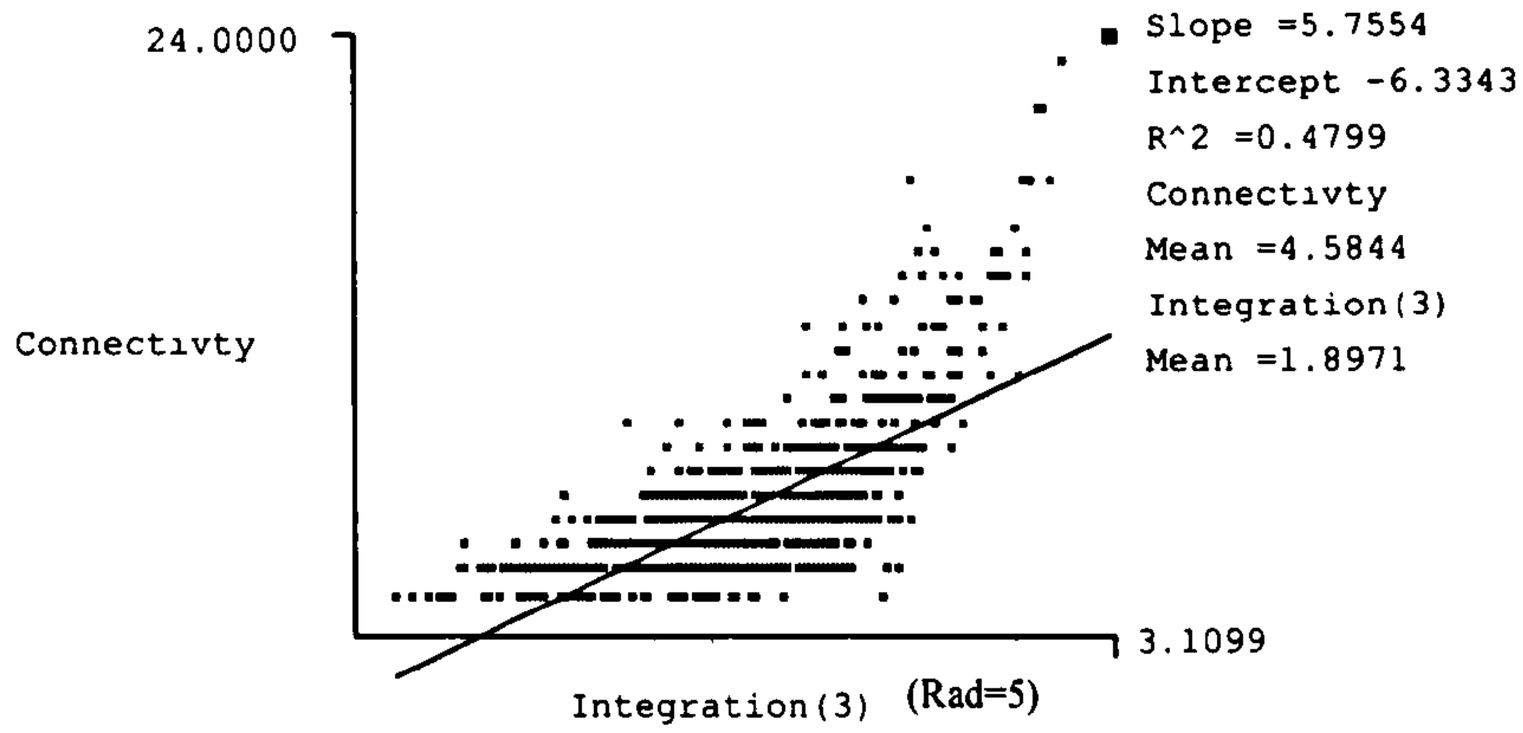


(2) The correlation between local integration (rad=5) and global integration of Taipei in 1945

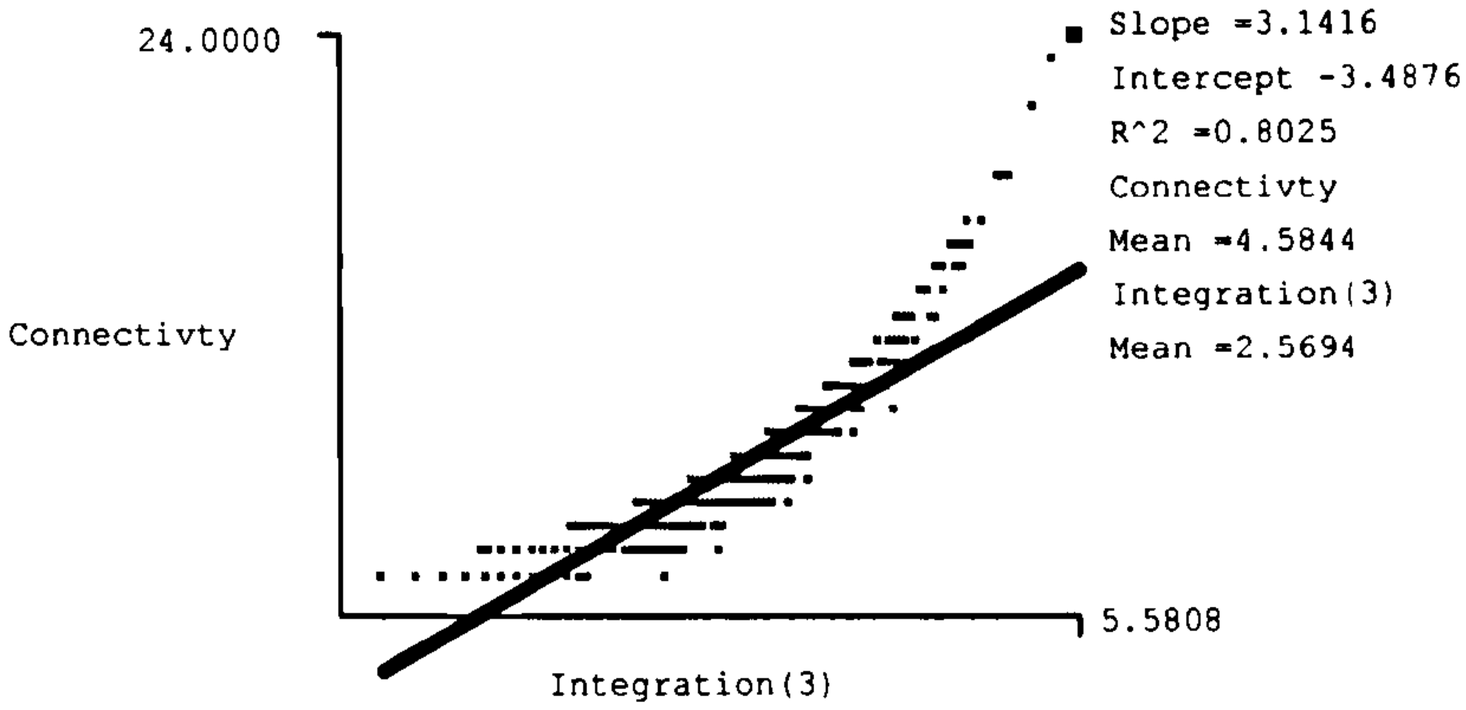


(3) The correlation between depth and global integration of Taipei in 1945

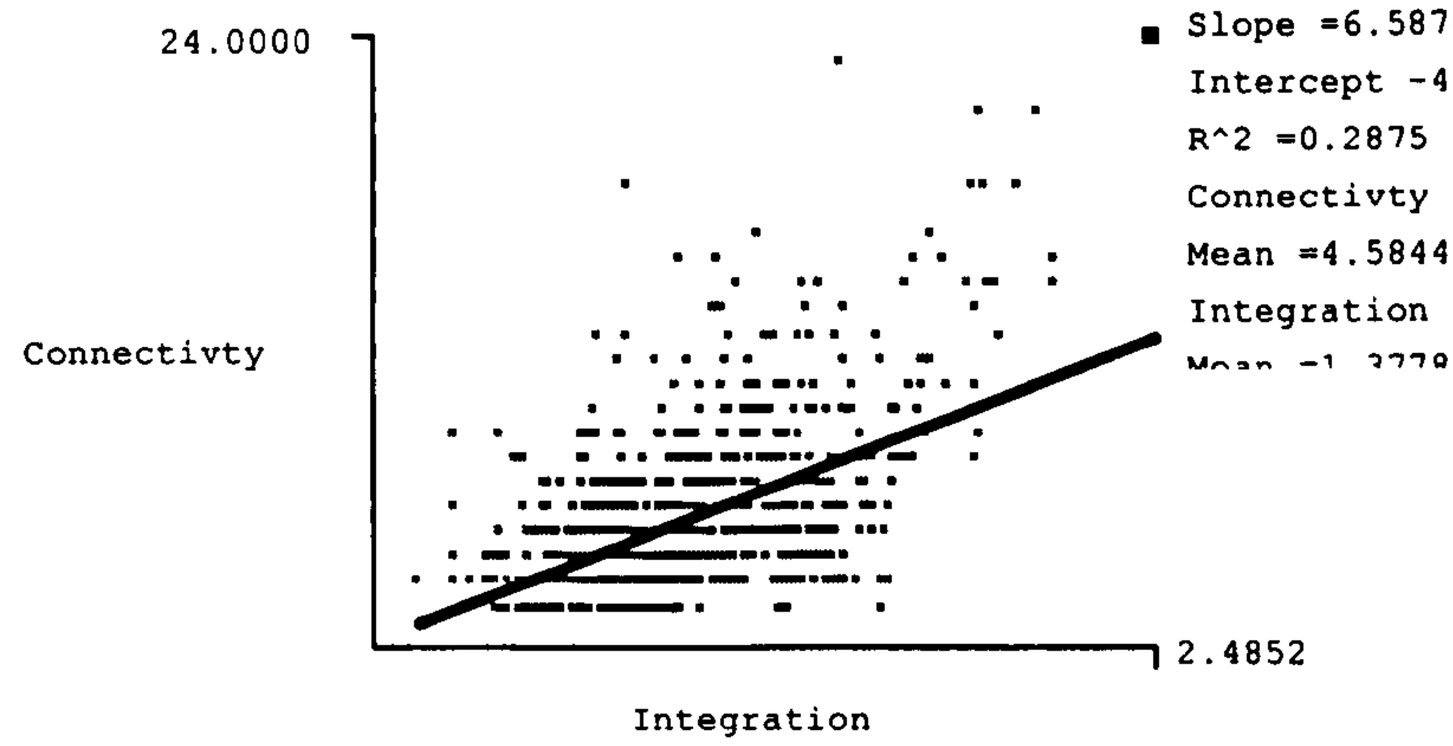
Fig.4.22-1: Scattergrams of local quarters within the context of the city in 1945 (1)



(4) The correlation between connectivity and local integration (rad=5) of Taipei in 1945



(5) The correlation between connectivity and local integration (rad=3) of Taipei in 1945



(6) The correlation between connectivity and global integration of Taipei in 1945

Fig.4.22-2: Scattergrams of intelligibility study within the context of Taipei in 1945 (2)

The planning committee drew up plans for restructuring the whole city and established the basic facilities intended to convert shabby Taipei into a model of a modern colonial capital city. However, those plans were often worked out by trial and error as experiments in managing the colony by Japanese authorities, including governors, civil administrators, and civil planners. In addition to planning designed to control insurrection and impose colonial power, the Japanese were full of new ideas and eager to test the latest theories and techniques learned from the West. One example was to adopt an out-of-context grand baroque-style plan for Taipei, which was indeed an imitative project from the western idea of "City Beautiful Movement" at that time. By the end of 1906, the Japanese themselves had developed a marked and permanent colonial character. For example, they designed the structure of road networks in a geometrical pattern, like the checkered chessboard, radial traffic roundabout and T-shaped intersections, in all sections of the city. Public buildings constructed along boulevards, on the periphery of the roundabouts, and at the centre of the main intersections were a compromise between the European and classical style, in an attempt to create a grandiose cityscape. Nonetheless, today the Cheung-sha and Kuei-yang streets meet in front of the Ching-shui Joe-sui Temple; Yen-p'ing North Road and Yen-p'ing South Road and Cheng-tu Road radiate from the Western Gate. All six roads converge at the Taipei Roundabout, clearly reflecting western city planning.

Besides, the exploration of the characteristic of colonial urban space needs to start with the understanding of the old torn-down city walls, which are indicated as the most integrated core in the early stage of the colony from previous analysis. The Japanese colonial government decided to tear down the old city walls in order to create three-lane boulevards like the great boulevards of Paris and Berlin as a great rectangle enclosing parks, and also used as main traffic connection. The planning of the city by the Japanese showed little care or reference to Taiwanese rights, interests, or ownership. City walls were torn down, houses razed, Chinese government buildings, traditional temples and schools demolished, cemeteries moved, and land expropriated as the engineering plans required. The plan of Taipei became a model of grid and radial street patterns with the shaded boulevards, parks and monumental fountains. Everywhere the new image of heavy Prussian mansard architecture of colonial buildings gradually formed a

new "Japanese Town" including an administrative district, an official residential area, and a section given over to private Japanese commercial interests.[57]

The acts had two main purposes. First, the Japanese wanted to obliterate any Chinese image or ideological linkage to the Mainland and were eager to build up a modern colonial image of the city by the Japanese Empire. Second, they manifested themselves as the political power of colonizers. The destruction of the walls leading to the establishment of three lanes esplanade was actually a display of military strength and civil grandeur, but it was also a gesture for the linkage of three separate quarters in the city. However, the old city gates were preserved as decorative monuments and made the focal points for wide tree-lined boulevards and avenues leading to the countryside.

The Japanese occupied most of the properties within the fortified city so that the social structure within the city walls consisted mainly of Japanese people. Therefore, local colonial residents had no choice but to settle down and concentrated their developments outside the old walled city, as a result, strengthening the spatial characters of traditional quarters of the city. This spatial pattern is clearly reflected in the axial analysis. The demarcation of the inner walled city from the outside settlements, on the one hand, was to pronounce the shift of the power within the boundary as the military and political centre of colonial Taiwan at the time. The interests of the subordinate local inhabitants would be policed to suit these overriding requirements.

The other specific characteristic in this period was the creation of a geometrical street system that transformed the whole spatial structure of the city. For example, the streets of the north-eastern corner and northern fringe of the city sacrificed their traditional character for a more orderly one. This was, first, due to laws enacted during the Japanese occupation that required a uniform scale for buildings and the organization of shops inside arcades, and second, to the advocates of western-style decorated building fronts. Indeed, this is still one of the most bustling and attractive areas of Taipei.

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[57] See Kerr, George H., 1974, *Formosa: Licensed Revolution and the Home Rule Movement 1895-1945*, Honolulu: The University Press of Hawaii, p.75

4.4.3 New patterns of colonial urban space after the first modernization

- **Quarters**

In this period, land was further developed to the east of the city. New residential quarters were constructed around the edge of the city. Two traditional residential quarters: Meng-chia and Ta-tao-ch'ing were also expanded and kept as residential areas for local Taiwanese people. They were separated from the inner walled "Japanese" town as a result of spatial segregation and control policies. Other than establishing some new market places and police stations, the colonizer executed little urban reform on the spatial reorganization of these traditional areas and rarely built new facilities compared with the areas inside the city walls in the early stage of colonization. The native quarters were autonomous and spontaneously developed according to the life patterns of local residents. Therefore, the traditional spatial habitat was preserved to a certain extent with the result that narrow linear streets with continuous lines of shop-houses still characterized their own scale and identity in comparison with the grand boulevards in the new re-modified inner city quarter. The present Tihua Street and Kui-Te Street as well as some sections in Meng-chia quarter (presently Wanhua district) are concrete examples of them.

The results of spatial analysis for the city in this period indicate two distinct patterns of urban quarters. One pattern is the new geometric grid pattern intersected by numerous long, straight and perpendicular streets and boulevards making a regular pattern as in most of the modernized colonial city. The other pattern is still preserved in the organic pattern of the traditional city. The different morphology creates a striking contrast between these two patterns in the city. The high values of the degree of local integration against global integration (0.8178 in 1925; 0.6886 in 1945) reflect the unbalanced and inharmonious segregation of two distinct patterns in the whole system. The old quarters have become relatively isolated islands as compared with the new extension in the form of grids, which are more integrated. (See Fig.4.17a and b; Fig.4.21 and Fig.4.22.) An amazing finding from the analysis of this hybrid pattern shows a dramatic effect. Each line in the new grid quarters is very shallow to the whole city, in turn, to absorb most of integration from the old core. This development coincides with the decline of the old quarters, but the shift of the major commercial activities seems to move into the new cores or new quarters. It also indicates that the new additional straight lines in the

old quarters, for example in the old quarter of Ta-tao-ch'eng, cannot enhance further integration, but make for isolation from the core of the city.

Fig.4.23 A grid pattern of the new quarter was characterized by grand and long greenery boulevards. (Source: Ye-nan-chia-tui, 1997:113)

The Japanese identified the traditional quarters as an annex of their quarter. Thus, in between the quarters, the Japanese created formal open spaces with geometrical patterns and oriented them with the central accesses to define, on the one hand, a psychological barrier to the inner area occupied by Japanese and the outer quarters inhabited by local people, and on the other hand, a symbolic image to manifest the power of Empire. Inside the quarter, a new grid pattern was formalized and characterized by grand long greenery boulevards that demarcated the territory (Fig.4.23). The purpose of such an urban space setting was to signify identity with regard to their respective cultures and spatial characteristics. In fact, the space within their territory, the old walled city, was shaped according to their familiar behavioural settings as in their motherland. It gave them an assurance of self-identification and self-confidence in the colony when they were far away from their homeland.

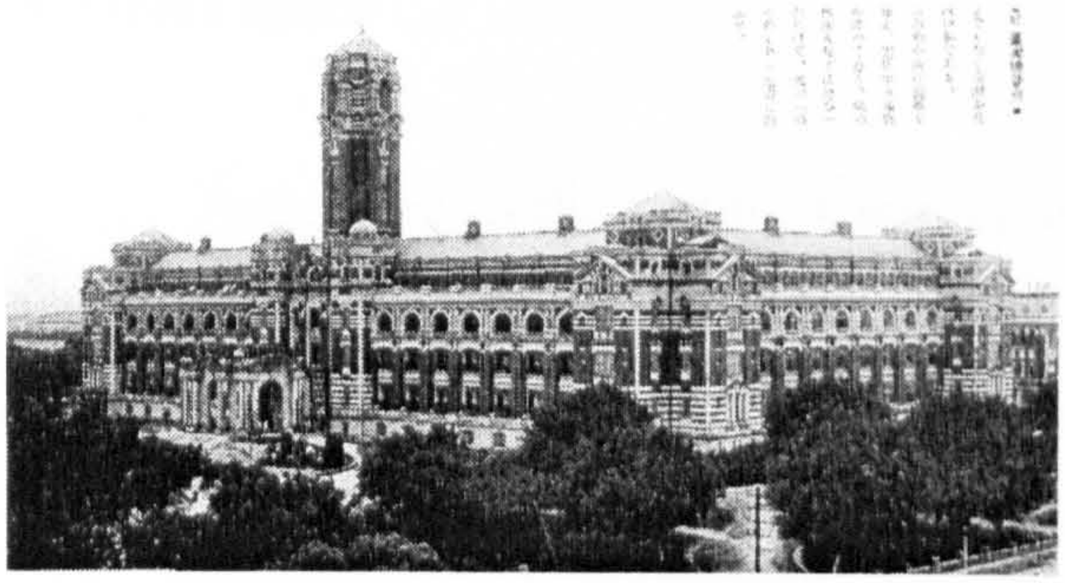


Fig.4.24: The classical Baroque colonial style of Japanese Governor House (the present House of President), (Source: after Ye-nan-chia-tui, 1997:111)

The official residence for the Governor of the colony (the present House of the President), a massive building in classical baroque style set in spacious open land, was designed in viceregal proportion in order to emphasize the importance of the governor's person and office (Fig.4.24). A much more modest red-brick Victorian dwelling nearby provided an official residence

for the civil administrators. These modern buildings, the parks and plazas within the old walled enclosure were arranged to provide a setting for the towering Government-General Building. However, the whole plan was not completed until 1918 (Kerr, 1974:76). In addition, a number of guardian shrines and temples were built in the northern suburbs according to ancient Japanese tradition and ideology which was the same as 'feng-shui' principles in traditional Chinese. One of them was the Taiwan Grand Shrine, which was erected on a commanding site (the present location of Grand Hotel) overlooking the Keelung and Tamshui Rivers and the city. The northern suburbs became a recreational area as well, marked by playgrounds, a ballpark athletic field, and a zoological garden. At the same time, the suburbs beyond the east gate of the old wall became a district of schools, research institutes and hospitals, and the principal Japanese residential settlement.

In sum, the identity of spatial quarters in this period is twofold: first, the new highly geometric plan of the quarter seems to have an intelligible order in relation to the whole city, but it may not carry out the same effect of intelligibility when one walks within the area with identical parts. It contrasts with the case in 1895, which manifests a sense of orientation when one walks along linear and twisted streets intertwined with distinct urban public spaces in organic quarters. Second, grand and monumental urban public spaces are emphasized in the modernized city. More urban thoroughfares, squares and parks provide infill within the spatial context, but in regular patterns by contrast with the traditional quarters.

- **Street space**

According to the result of spatial analysis, the street spaces were more linear than the winding and twisted pattern of the Ch'ing period. However, the streets in traditional quarters still held with the original short and narrow forms without much destruction, thus indicating their informal character. In contrast, the new modern long and grand street network in the expanded quarters was more formal. Besides, in this period Japanese officials laid out new street systems according to the classification of their functions, such as main boulevards, commercial streets, and residential streets. Obviously, the construction of a new commercial street network in the inner walled city, the street network of the new districts outside east gate

and west gate, and the redevelopment of street network in the old quarters of Ta-tao-cheng and Meng-chia created a clear hierarchical order of urban spatial structure in the modernized city.

Fig.4.25: The three-lane boulevard was a new "Baroque style" street pattern in the colonial city. (Source: Ye-nan-chia-tui, 1997:113)

In terms of formal street spaces, the forms of new street patterns were typically grid blocks with roundabouts at the vista points and radiating street networks. These were the "Baroque style" street patterns that replaced street networks of the traditional walled city. For example, the new modern three-lane boulevards extending from the old city walls (Fig.4.25), which were constructed with the intention of maintaining a distant relationship with the local Taiwanese residents, represented a formal urban space to stand as a psychological barrier between the colonizer and colonist. This new street space indeed delivered a message of three ideas: first, the new construct was to ensure the practice of "public health" to all residents; second, it decorated the urban space with large green areas and parks that pronounced the new modernized city; third, it was a symbolic urban space to represent successful execution of dominant power over the colony.

Besides, the informal traditional streets with Chinese character of the Ch'ing period were modified or refurbished in a Western style with the installation of columns with Greek order, and the application of neo-classical Renaissance decoration elements on the facades or gables of the traditional buildings. For example, Tihua Street is a long and linear market place running at north-south direction. Its classical facades not only adopted baroque style with red-brick built arcades, but also maintained the Ch'ing characters with their carved animals and engraved family signboards. The mixture of these elements formulated a typical style and pattern of Japanese colonial streets during the period. This kind of street was not only to fulfil a function of people's circulation and movement, but it was indeed a representation of communal space which contained daily life activities such as the bazaar, social meeting, etc. and performances of local cultural and festival activities (Fig.4.26).

Fig.4.26: The streetscape of elongated shophouse is preserved with original Chinese character and colonial image of decoration in present Tihua Street.

This would create a live and rich urban space. The baroque-style facade also enriched the spatial quality of street space. Although the street patterns in the traditional quarters had been transformed, the network had kept with the original spatial structure so that the main narrow linear street integrated with a sequence of small pocket urban squares ch'eng), which enriched the form of urban space with traditional local flavour, bringing daily commercial activities, religious festivities, and the night markets in the surroundings of Lung-shan Temple and Taipei's roundabouts.

In comparison with the streets in the new expanded quarters and the streets in the old quarters, several aspects indicated their different spatial characteristics. First, the wide and grand boulevard with rows of trees was more ceremonial than the modest winding streets of the old quarters. It symbolized the dominant status of the colonizer, compared with the sub-ordinate role of the colonised, and became a symbol of status. Second, the traditional street was enclosed with narrow and deep two-storey shophouses forming a more even enclosure of urban space than the grand boulevard. Third, the grand streets were constructed to display military strength and degree of civil modernization as well as to symbolize the social order, as compared with the humble traditional streets.

- **Square (formal and informal)**

Fig.4.27: The monumental square in front of Governor House was an urban form of surveillance or protective zone. (Source: after Ye-nan-chia-tui, 1997:111)

The quality and characteristic of squares in this period were more formal than those in late Ch'ing period. The informal squares in traditional settlements were often used as a place for urban life activities such as social gathering, entertainment, and worship. But the establishment of the monumental plaza with its formal plan and function in the new expanded areas, such as the square in front of the Governor House, was typical of the colonial typology of urban public space. Besides, this monumental square was created as the surveillance or protective zone for the House as well as for military purpose that signified the ideology and the dominant power of the colonial government (Fig.4.27).

- **Open space: boulevard, avenues, parks, and gardens**

The attitude of the Japanese towards open space was different from the Ch'ing government because they had different social values for dealing with urban space. The interest of private 'family value' rather than public 'civic value' was more emphasized in Ch'ing residents in comparison with the westernized Japanese at the time. In that sense, Ch'ing residents were more interested in a private courtyard within their dwellings than a large public open space. Indeed, the axial analysis shows that there was no well-planned grand public open space such as boulevards, avenues, and public parks. Instead spontaneous small pocket of public open space such as temple squares (miao-ch'eng), and linear and narrow market streets dominated the old quarters in Ch'ing Dynasty planning in Taipei.

In contrast, the characteristics of public open space in the Japanese colonial era were fourfold:

1) The scale of open space was grand, wider and geometric in form. For example, the grand three-lane boulevards which ran along the old inner city walls; the new green parks which were constructed with large areas, such as Yuan Shan Park, 9.8 hectare built in 1897; Taipei Park, 7.83 hectare built in 1908; and Chuen Tun Park, 59.9 hectare built in 1932[58];

2) The grand, formal and symmetrical open space, which is explained in the axial analysis, was a representation of monumental space that symbolized a dominant colonial culture and served for carrying out annual celebrations to worship the Japanese emperor or the military parades, and was used for public ceremony or sports festivals for the colony. It also tried to function as symbolic assimilation as real Japanese citizens;

3) The pattern of public open space represented a symbol of colonial power that delivered a message of efficiency, dominance, and scientific control over the place. It also asserted another sense of spatial enclosure as the patterns of activities were limited by certain disciplines, which were endorsed by the dominant colonizer. Referring to the new sense of 'spatial enclosure', Foucault (1992) asserts that a spatial creator often uses certain forms of cultural patterns, which brainwash the users in order to control mind and body through a subconscious sense of enclosure, instead of using a solid physical structure;

4) The spatial form of open space reflected Western planning and delivered a sense of modern recreational life style.

4.4.4 Hidden rules and critical ideas behind the colonial urban space

The expansion of the built area in 1925 and 1945 was increased by 2.5 times and 24.5 times respectively in comparison with the urban area of the city in 1895. (See table 4.1.) That expansion caused a dramatic transformation of urban landscape. The logic and concepts behind the transformation are probably threefold on the basis of axial analysis.

First, new grand boulevards, which were achieved by the destruction of the old city walls and were the main central spaces in the city, are spatially the most shallow and best-

[58] See Hsiu, Yue-ch'ien, 1993:98.

connected part of the colonial urban space system although delivering a different functional and cultural form in contrast to the old city. The new grid pattern generates a new order; however, it is incompatible with the old organic pattern as the increasing difference between the values of the degree of the most integrated and the less integrated lines indicate (0.2864 in 1895; 0.9335 in 1925; and 1.7294 in 1945).

Second, the colonial grid spatial pattern destructs the old integrated cores, as shown by the displacement of major commercial activities from the traditional street or bazaar to the edges of new grand streets close to Western District (Hsimenting). This is a side effect of social and economic deconstruction of the old structure. It seems to reflect the change of spatial and social landscape since the planned colonial geometric grid form overpowers the spontaneous growth of traditional organic form. In that sense, a representation of 'colonial power' is the most dominant factor behind the fundamental layout and ideology of colonial urban space. It also aims to achieve the spatial segregation in order to emphasize the dual relationship between colonizer and colonist, or dominant and subordinate in colonial society.

Third, the spatial analysis demonstrates the transformation of the asymmetric and asynchronous centre in the traditional settlement into the symmetric and synchronous centre in the modernized colonial grid city. The expansion of the grid city also reflects a shift of the integrated centre from the periphery making the old inner walled city become the spatial centre of the whole city in this period.

4.5 The third change in spatial configuration: Taipei in the Nationalist authoritarian state (1945-1988)

After the return of Taiwan to the Republic of China in August 1945, the system of provincial administration was reactivated and Taipei became the capital city under the jurisdiction of the Taiwan Provincial Government. In October the same year, the City was formally divided into 10 administrative districts including the old districts: Sheng-yuan and Lung-shan (the area of Meng-chia); Ch'eng-chung and Ch'ien-cheng (the area of old inner walled city); Yen-ping and Tai-tung, (the area of Ta-tao-ch'eng); and the new districts: Sung-shan and Dai-an (the present Eastern District); Chung-shan, and Gou-ting, retaining the old city boundaries (Chen, Cheng-sheng, 1951).

In the early stage of Nationalist Chinese government in Taiwan, the city was designated as the nation's political, military, cultural and economic centre in wartime. The central government promulgated Taipei as a special municipality under the immediate jurisdiction of the Executive Yuan, effective as from July 1, 1967. As the instructions of President Chiang Kai-shek who decreed, 'Taipei is the site where the Central Government is located and also the capital city of the nation in war time. The aim of elevating its status to a special municipality under the jurisdiction of the Executive Yuan is to reconstruct it as a modernized city so as to meet the demands of war time. All its planning, organization, system and operations should be carried out hereafter in conformity with the above concept and understanding.' At the same time, the six towns located at the outskirts of Taipei, namely, Chingmei, Nankang, Mucha, Neihu, and Shihlin and Peitou of the Yangmingshan Administration, were also formally merged into the city area, expanding its registered built area to 22,097.60 hectares (See Urban Planning Department, 1983).

In fact, the significant growth of Taipei rocketed after the year of 1949 because of the influx of mainlanders. The population of Taipei increased from half million in 1945 to 1.56 million in 1968. In 1984, the population had reached 2.65 million but the growth of population remained stable in the following decade. The extent of the urban area diameter reached 10 kilometres. At the present time, the Taipei metropolitan area contains a quarter of the total population of Taiwan.

The political situation in the era of 1950s made Taipei a wartime provisional city. The objective of recovery of the mainland greatly influenced the spatial development of the city. Priority of city development was secondary to the concentration of military defence at the time. Restrictions and planning guidelines were laid down to dictate the area of construction and use, which dominated the formation of urban patterns. Not much civic work were carried out in this early stage. Thus, most colonial Western style buildings within the inner walled city built by the Japanese have become the property of the new Chinese government. For example, the Presidential Palace, the Provincial Museum, the Executive Yuan, the Police Headquarters, the old building of National Taiwan University Hospital at the periphery of the original walled city, the Taipei Post Office, the Taipei Guest House and the Provincial Government Monopoly Bureau near the roundabouts, are all preserved for the city. They have hence become landmarks

in Taipei. These buildings and the parks, plazas, schoolyards and boulevards, constitute what is now an unbearably crowded dense city with few pleasant open spaces.

However, the expansion of the city in the 1970s incredibly transformed the urban image of the city with regard to its spatial structure and pattern. But the legacy of the original Japanese grid pattern did contribute to the urban design of the new city plan. From an objective point of view, the urban planning and spatial construction undertaken during the Japanese occupation was undoubtedly successful and efficient. It established a concrete foundation for further modernization. For example, in 1932 the city plan already proposed to provide urban living space for about six hundred thousand people, and to establish a complete city and efficient administrative system for spatial construction.

Fig.4.28: The Chiang Kai-shek Memorial Hall offers the imperial Chinese image and grand scale in landscape design. (Source: Formosa post card by Osima Co.)

Given the situation, the official planning employed the existing infrastructure and the administrative system left by the Japanese and continued to follow the existing Japanese grid system for extending the spatial boundary of the city. Buildings with a Chinese image were used emphasized to replace the Japanese colonial image. It is thus not surprising that the three historical city gates in direct line with the House of the President were all renovated into northern-style Chinese palace buildings in 1966. Furthermore, the Chinese style and form of both Chiang Kai-Shek Memorial Hall and Sun Yat-sen Memorial Hall were designed on a grand scale and with huge dimensions to reflect the Imperial city on the mainland. All these gestures were an attempt to redefine Chinese ideology and to recapture the Chinese sense of place for the city, as the top officials believed the concept could dissociate the city from its Japanese colonial image (Fig.4.28).

In addition, the construction of new Chung-Hwa Market Place in 1950 with its 1200m length also changed the spatial character of the old area within the context of the city. The

market was located along the present Chung-Hwa Road in replacement of the three-lane boulevard laid down by the Japanese which was a project to resettle refugees in a run-down area. In fact, 74% of the total population of the old areas was Chinese immigrants in compared with 26% of local Taiwanese at that time.[59] The market became a successful commercial anchor of the region and strengthened the intensity of local life activities and business promotion. This public space seemed to hold together the thriving business of Hsimenting, and at the same time, to change the spatial structure of the city. The logic and reasons behind the transformation of spatial pattern in this period is explored in the ensuing section.

4.5.1 A morphological analysis of Taipei in the Nationalist authoritarian state (1945-1988)

In this period, the geometric grid pattern is dominant over the whole city. The total area of registered built land in the early stage of this period remained almost the same as in 1945, but increased to 22,366.87 hectares in 1977. The expansion of the city was indeed to reflect the rapid growth of population in the second stage of modernization. The total population in 1977 had already increased to more than two million and one hundred thousand people compared with about three hundred and thirty thousand people in 1945. Taipei changed from a small town to become a metropolitan city by the end this period. Taipei then consisted of a network of streets, large and small, traversing the basin until they meet the rim of mountains that surround the city (see Table 4.1).

[59] Source: the Statistical Abstract of Taipei Municipal City.

- **Properties of 1956 Taipei**

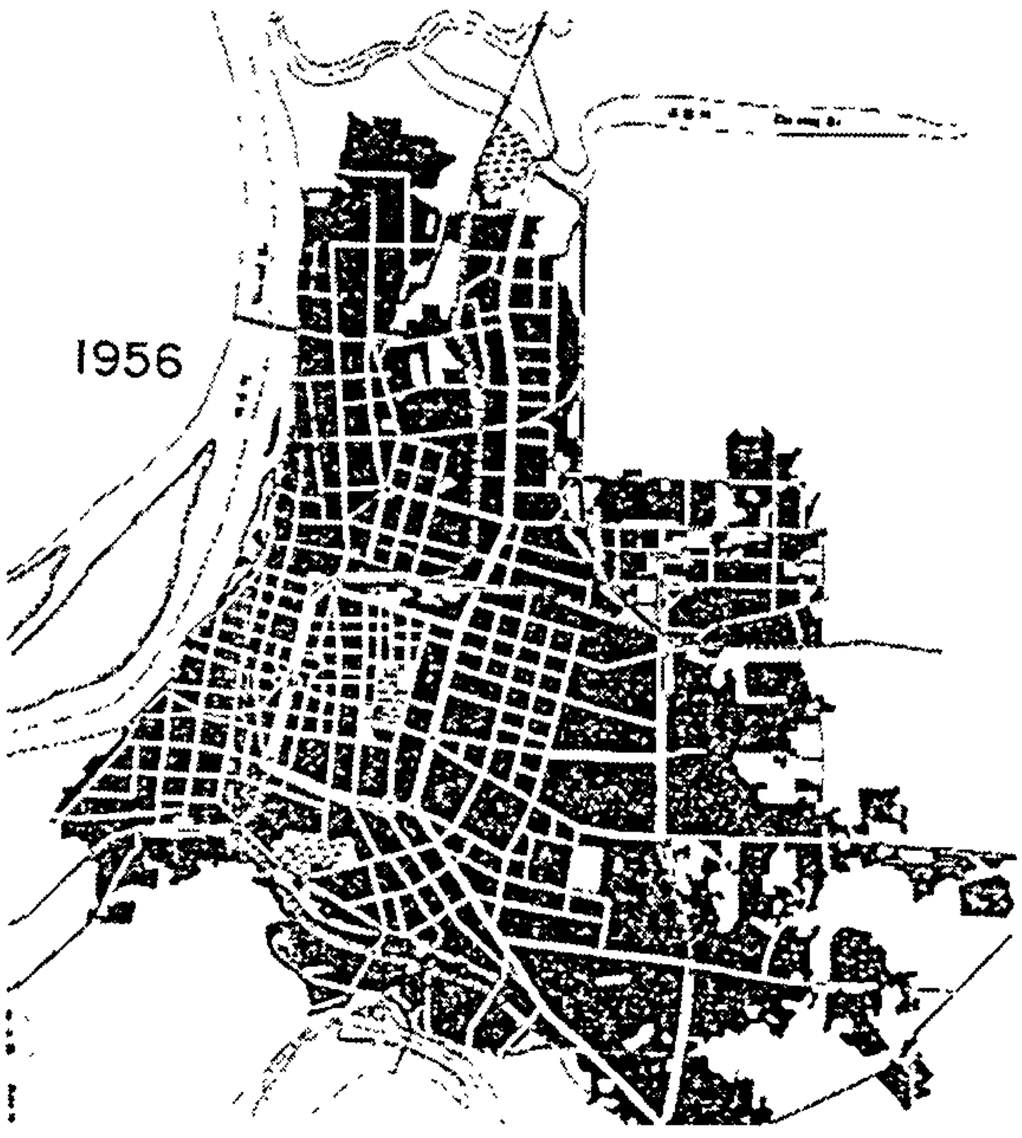


Fig.4.29: Spatial structure of Taipei in 1956

The axial analysis of urban space in 1956 is distinguished by its more geometrical open space structure (Fig.4.29) as indicated by the strong connectivity and low value of the degree of convex deformation (0.7773 against the mean value 1.1330) compared with the fragmented organic urban fabric in late Ch'ing period and the mixed pattern of organic and grid-like urban texture in the Japanese colonial era. Obviously, the most integrated core shifts from the location of old city walls to the central location of the city which is distinguished by two linear and intersecting roads making up the principal axes, as compared with the axial analysis in the previous stages. Low axial articulation values (0.0253 against mean value 0.0343) show the existence of these continuous linear major axes. It is also evident that most of the lines, which belong to the local core, also belong to the global, thus making the urban pattern of 1956 Taipei a good example of less accessible quarters converging towards a common centre (Fig.4.30).

The lower value of grid axiality (0.0530) in 1956 Taipei shows that the dispersed irregular quarters at the peripheral region are greater than the orthogonal grid pattern. This is an unexpected result in contrast with the perception of stronger orthogonal grid spatial pattern before the axial analysis. Indeed, the result reflects significance of the expansion of dispersed and piecemeal quarters clustering around the edge of the city. However, the low value of the degree of convex deformation (0.7773 against mean value 1.1330) also reflects the spatial character of the grid-like, regular pattern in the heart of the city.

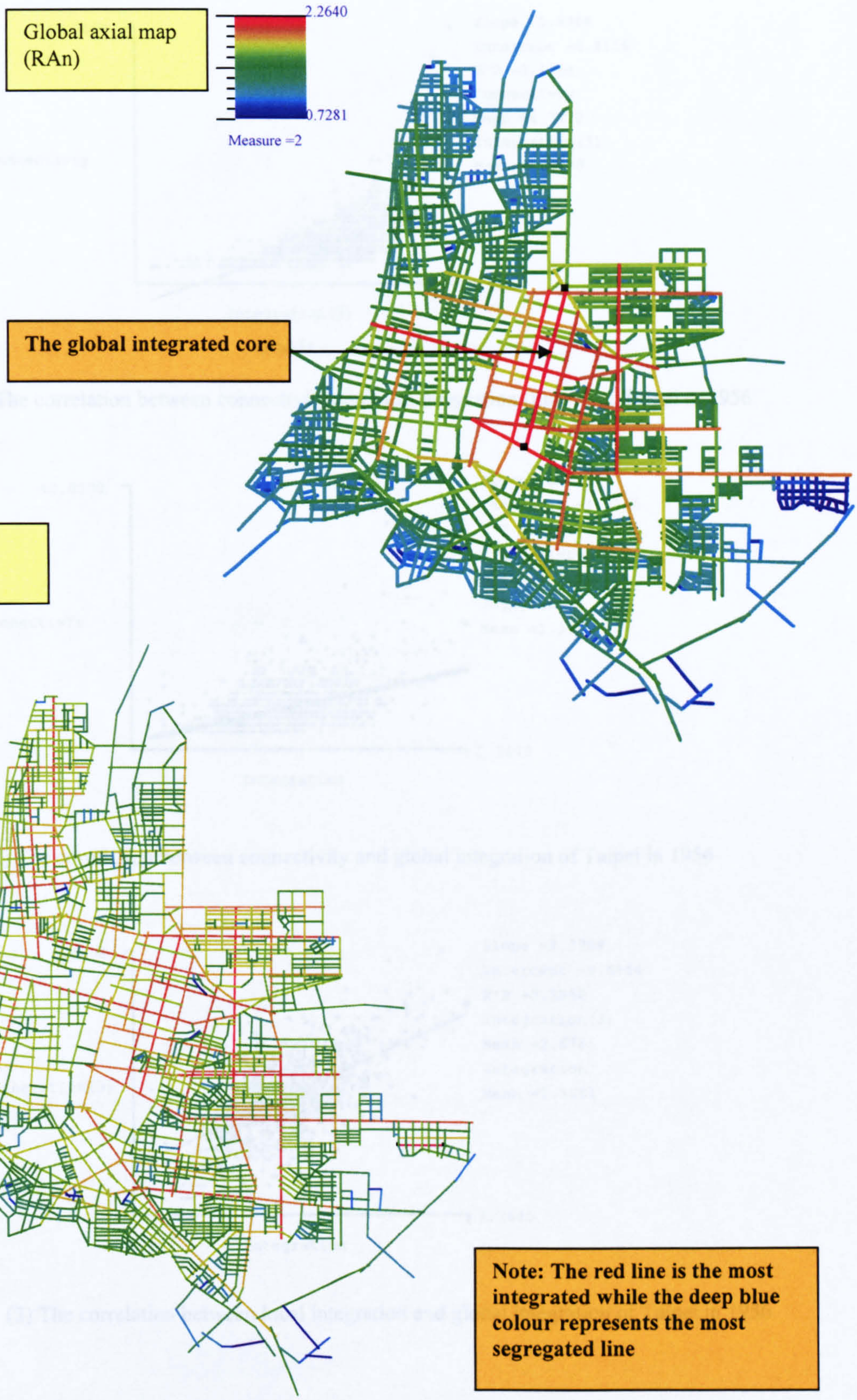
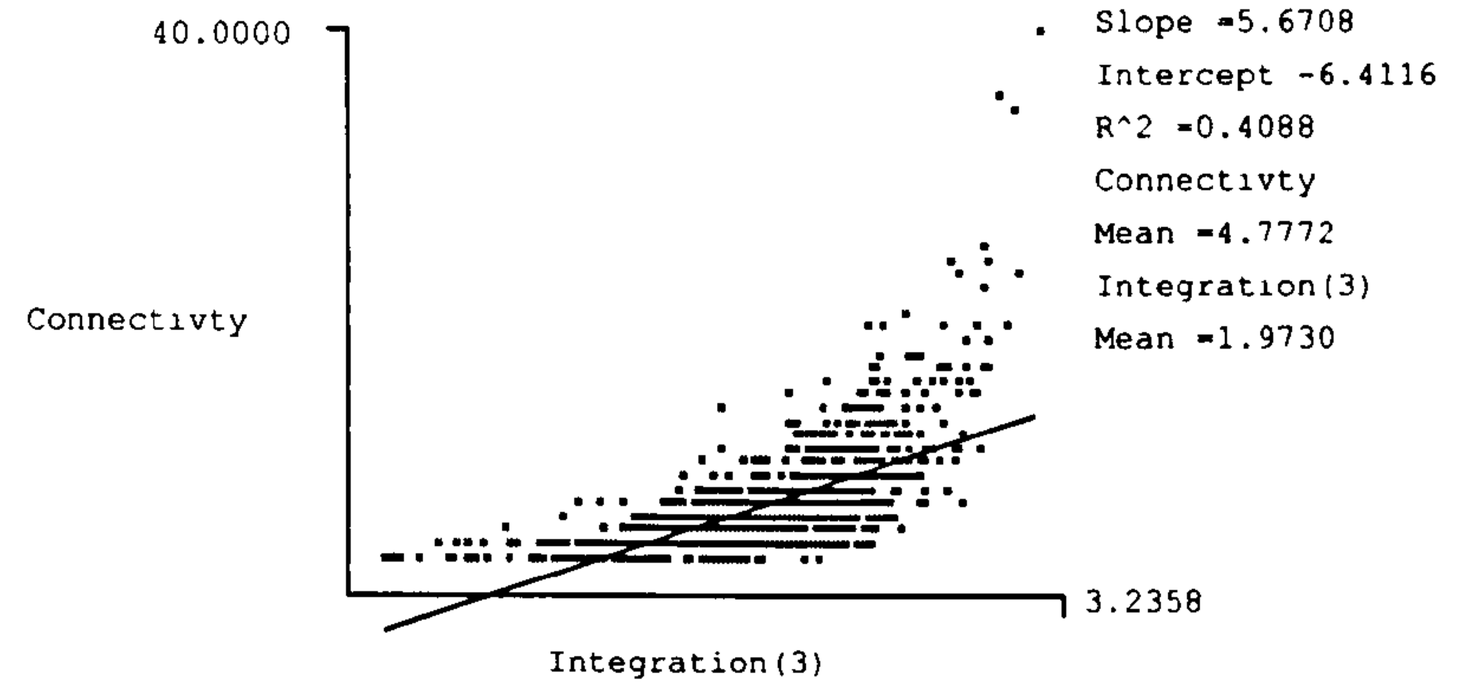
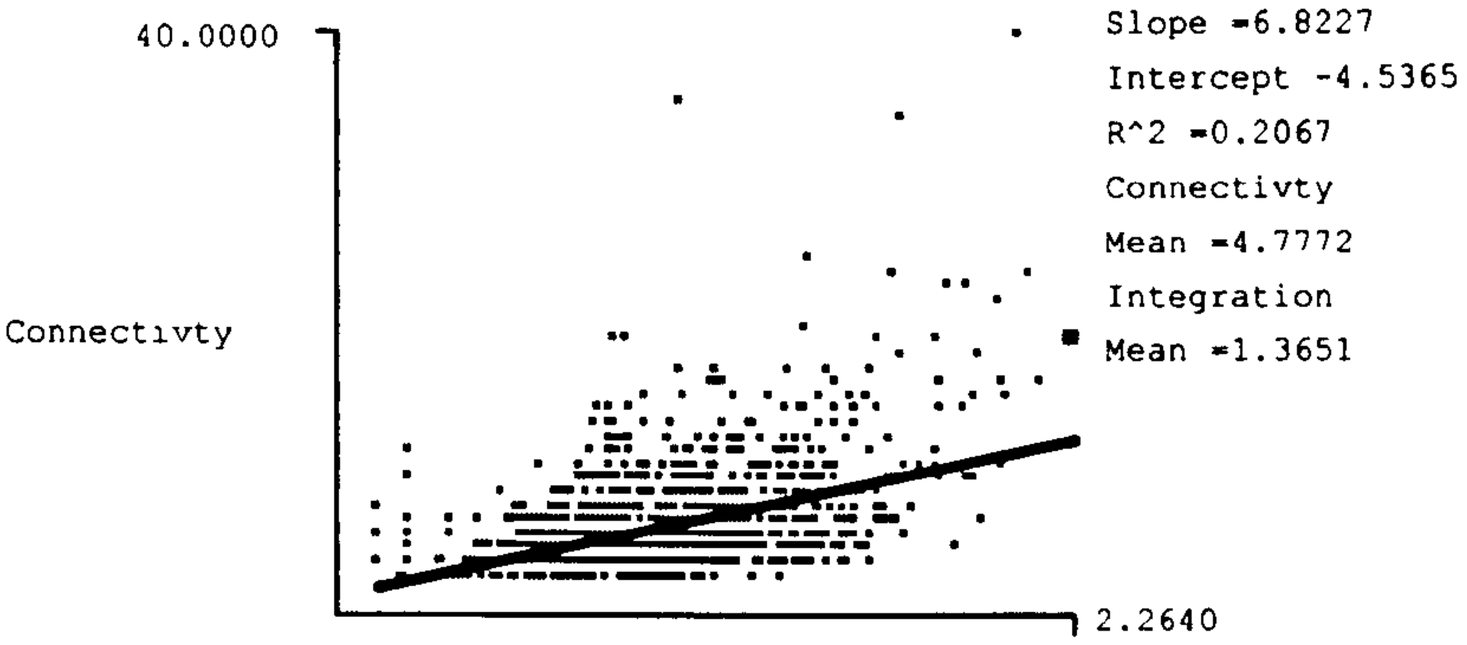


Fig.4.30: Axial analysis of Global integration (RAn) and Local integration (RA3-rad 5) of Taipei in 1956

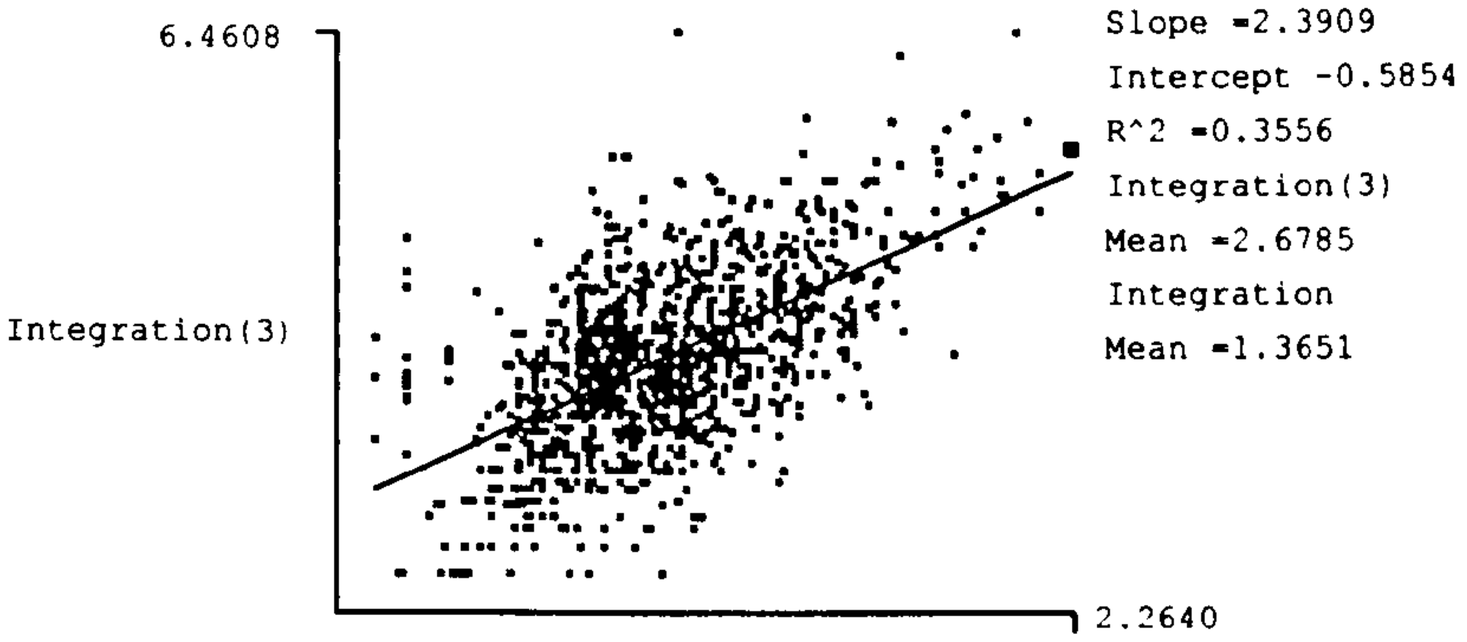


(Rad 5)

(1) The correlation between connectivity and local integration (rad=3) of Taipei in 1956

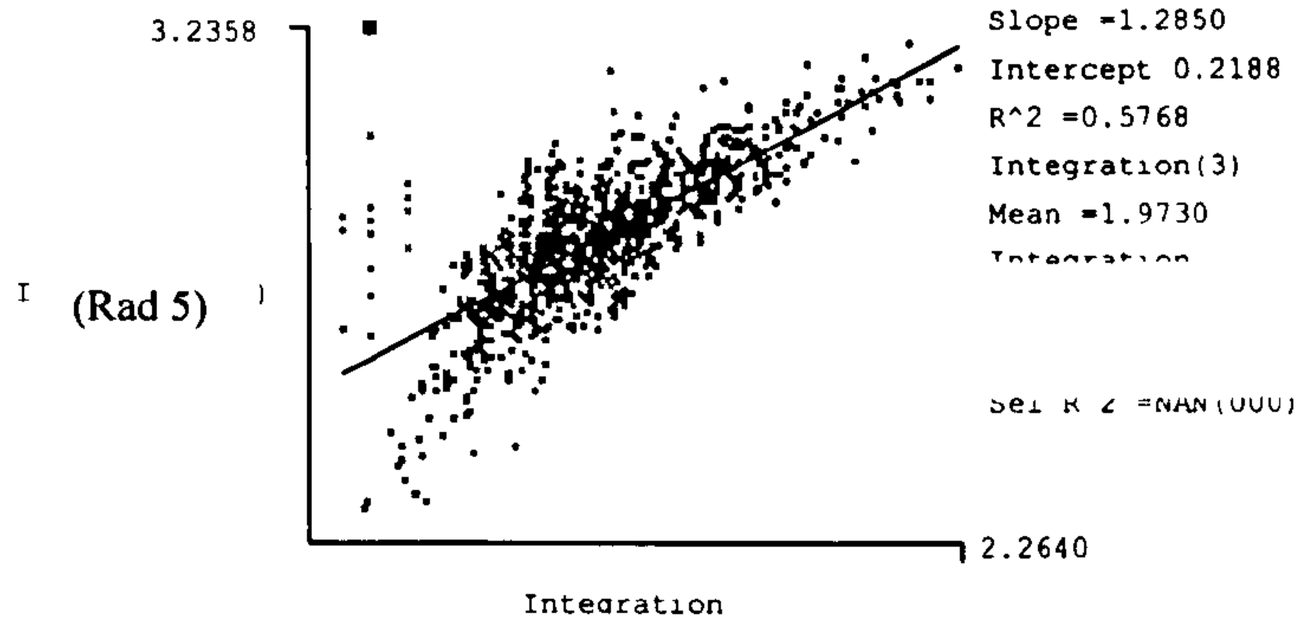


(2) The correlation between connectivity and global integration of Taipei in 1956

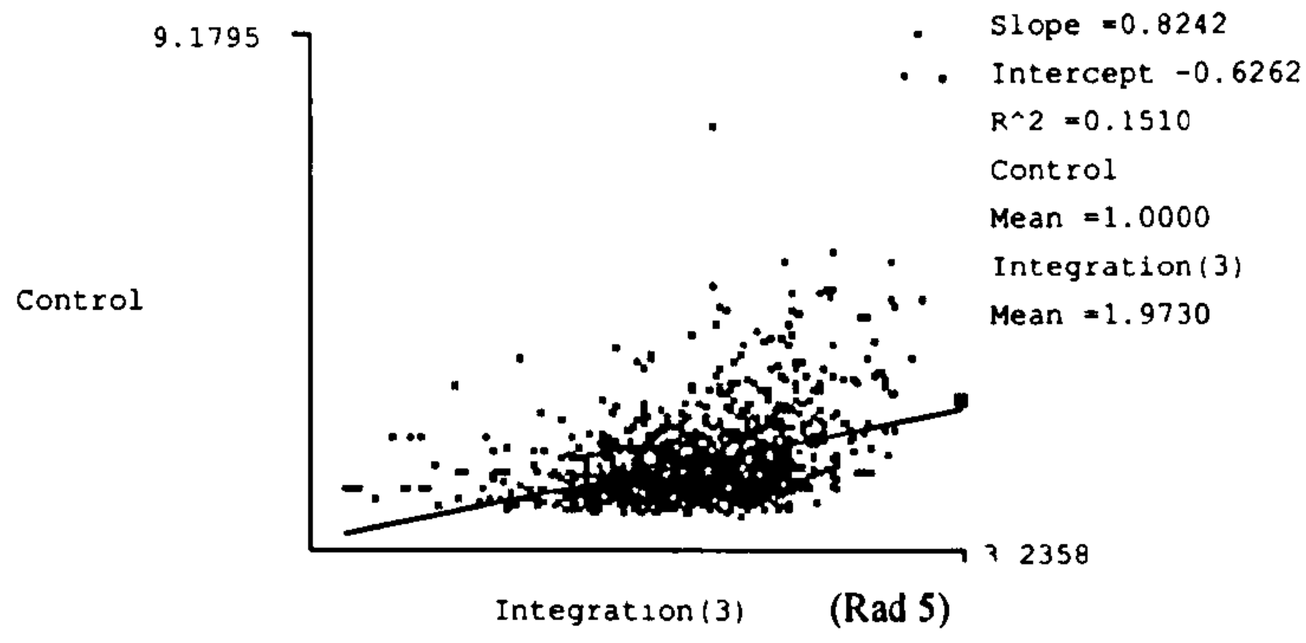


(3) The correlation between local integration and global integration of Taipei in 1956

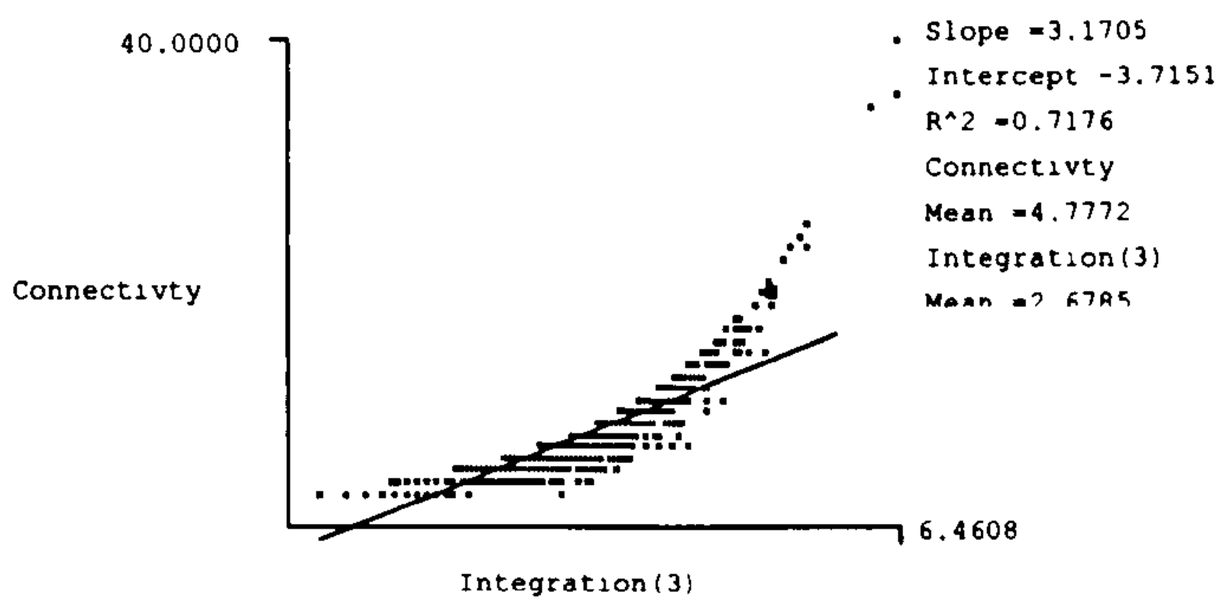
Fig.4.31-1: Scatter of local intelligibility within the context of Taipei in 1956



(4) The correlation between local integration (rad=5) and global integration of Taipei in 1956



(5) The correlation between control and local integration (rad=5) of Taipei in 1956



(6) The correlation between connectivity and local integration (rad=3) of Taipei in 1956

(7) The correlation between control and global integration (rad=n) of Taipei in 1956

Fig.4.31-2: Scattergrams of Taipei in 1956

The low values defining the axial articulation (0.0253 against the mean value 0.0343) also reflect fewer breaks and twists per unit length than the urban space structure of the city in 1956. The evidence shows that all major new streets extending from the old area are dominant with their long, straight pattern in the centre of the city. And the high rate of thoroughfares to dead end ratio strengthens the argument. Besides, the values of convex and axial ringiness more or less close to the mean values indicate that the characteristic of urban space structure is the composition of irregular urban blocks at the peripheral region and the intersecting geometrical grids with long views in the central region.

The fact that the mean integration value {1.3651, which is indicated in the scattergram Fig.4.31-1(2)} is higher than in the other periods except 1945, indicates that the spatial pattern of 1956 has substantially less global integration in comparison, and shows the existence of a deep and segregated urban layout. This result also reflects that some substantial inaccessible local areas are not penetrated by the core, such as old Meng-chia quarter (in present Wanhua district). However, by and large, the global core is stronger than most of the local cores and the internal integration of the quarters is weaker than the integration of the whole, as the mean values of the degree of global integration (1.3651) is lower than local integration (1.9730). (See Fig.4.31-1)

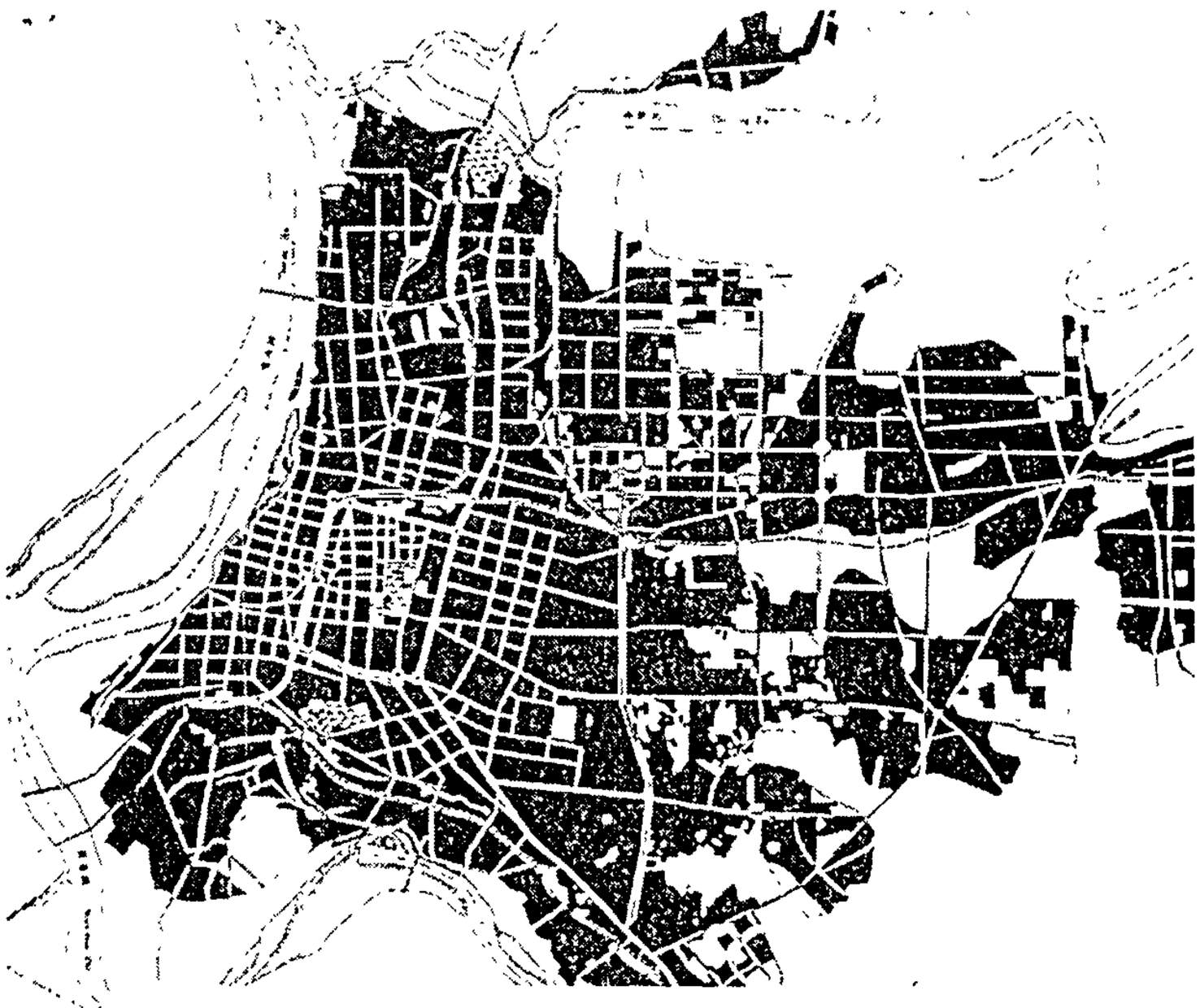


Fig.4.32 Urban spatial structure of Taipei in 1977

• Properties of 1977 Taipei

The regular geometrical grid became a dominant pattern of the whole urban context in this period (Fig.4.32). The result of axial analysis shows that the global integration cores eventually shift to the east of the city due to its expansion and is slightly more spread than the previous stages. It is distinguished with longer axial lines with good connectivity at the core area, which is characterized by two double X-Y principal axes {which are formed by Sungchiang Road – Nanking Road (1-A), and Tunhua Road – Hsinyi Road (2-B)} for controlling the whole pattern (see Fig.4.33). It also has a less integrated pattern, reflecting its higher global integration mean value (1.3439 against mean value 1.0240, see Fig.4.35a) in comparison with the previous stages of the late Ch'ing period and the early period of the colonial Japanese colony. But it is more integrated than in 1945 and 1956. The value of convex articulation is low (0.0134 against mean value 0.0297) which means fewer breaks and more synchrony in the convex space structure. In addition, the lowest value of the degree of axial articulation in this stage (0.0139 against the mean value of 0.0343) shows that the spatial structure of the city has a stronger grid and axial pattern than other stages. The value of convex deformation (0.9539) close to the mean value (1.1133) suggests that the grid-like, regular structure at the heart of the city and the clusters of irregular pattern at the peripheral regions balance the composition of the whole urban layout. The spatial pattern of 1977 illustrates that the deformation of the urban grid in the old urban area appears as a principle of differentiation from the new urban centre.

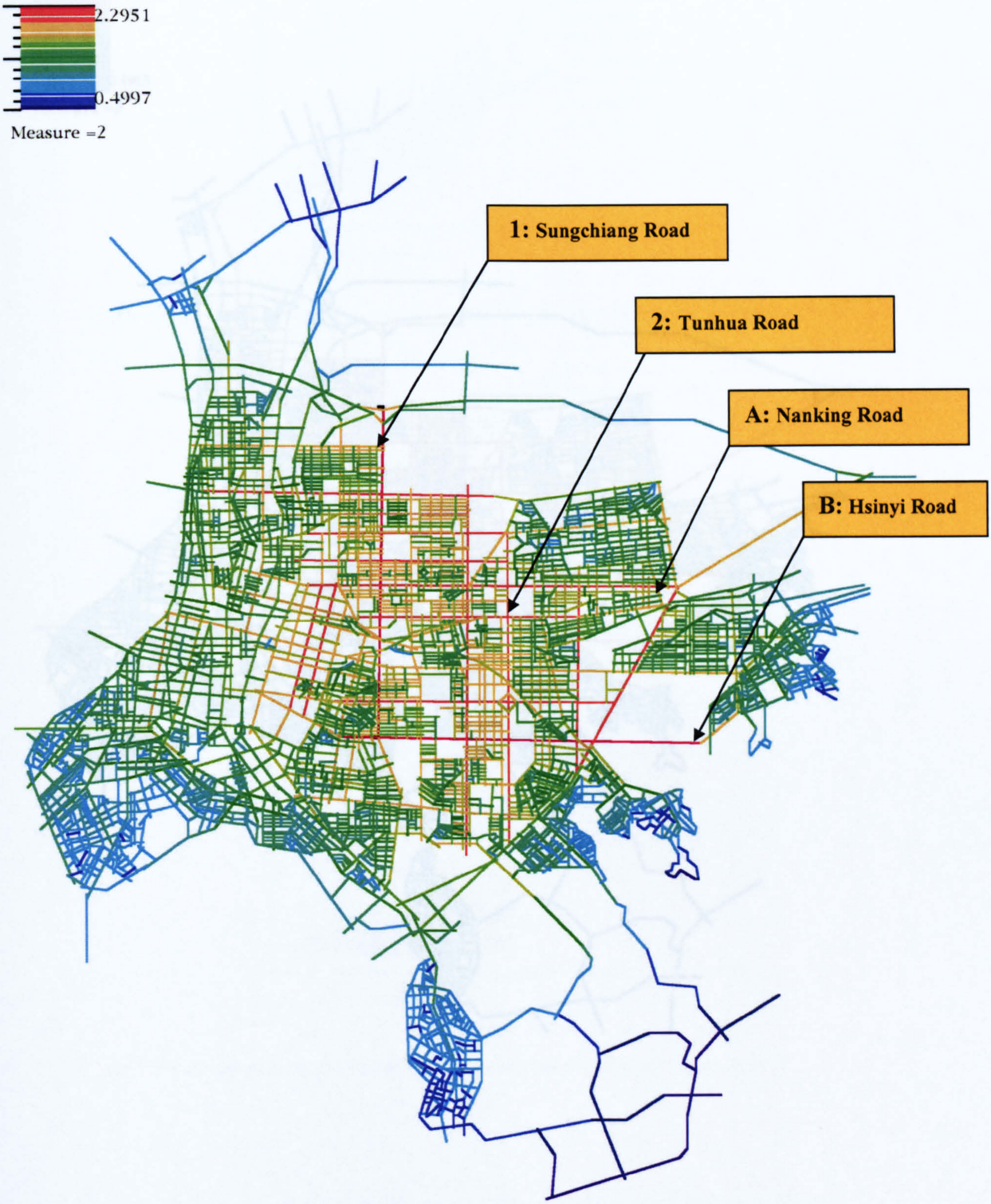


Fig.4.33: Axial analysis of Global Integration (RAn) of Taipei in 1977

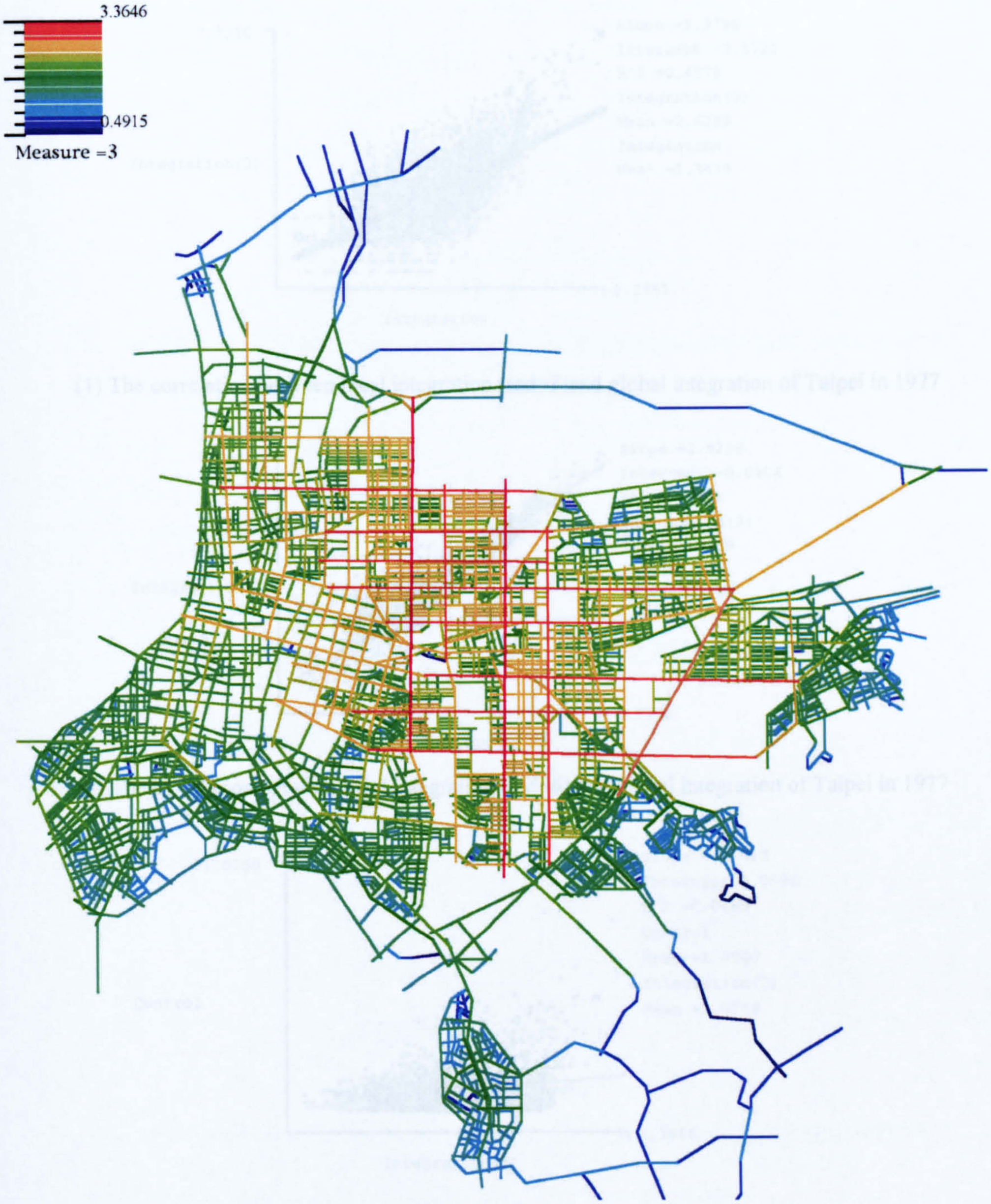
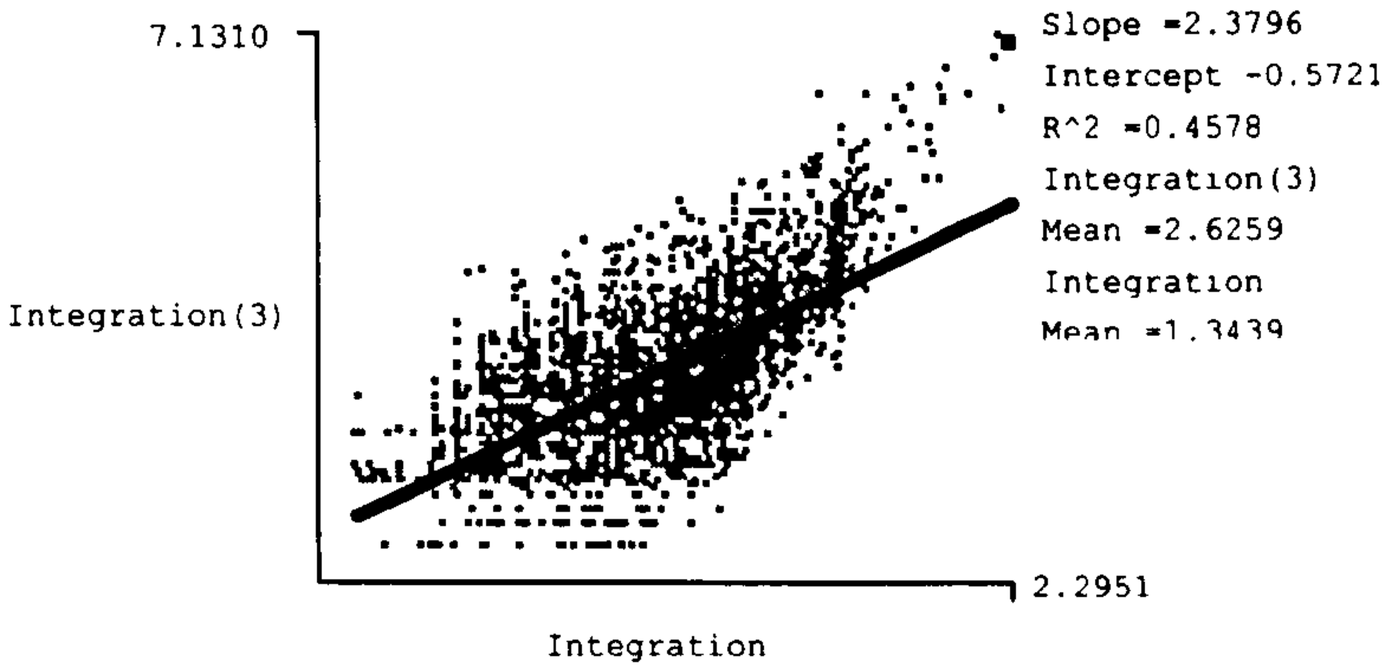
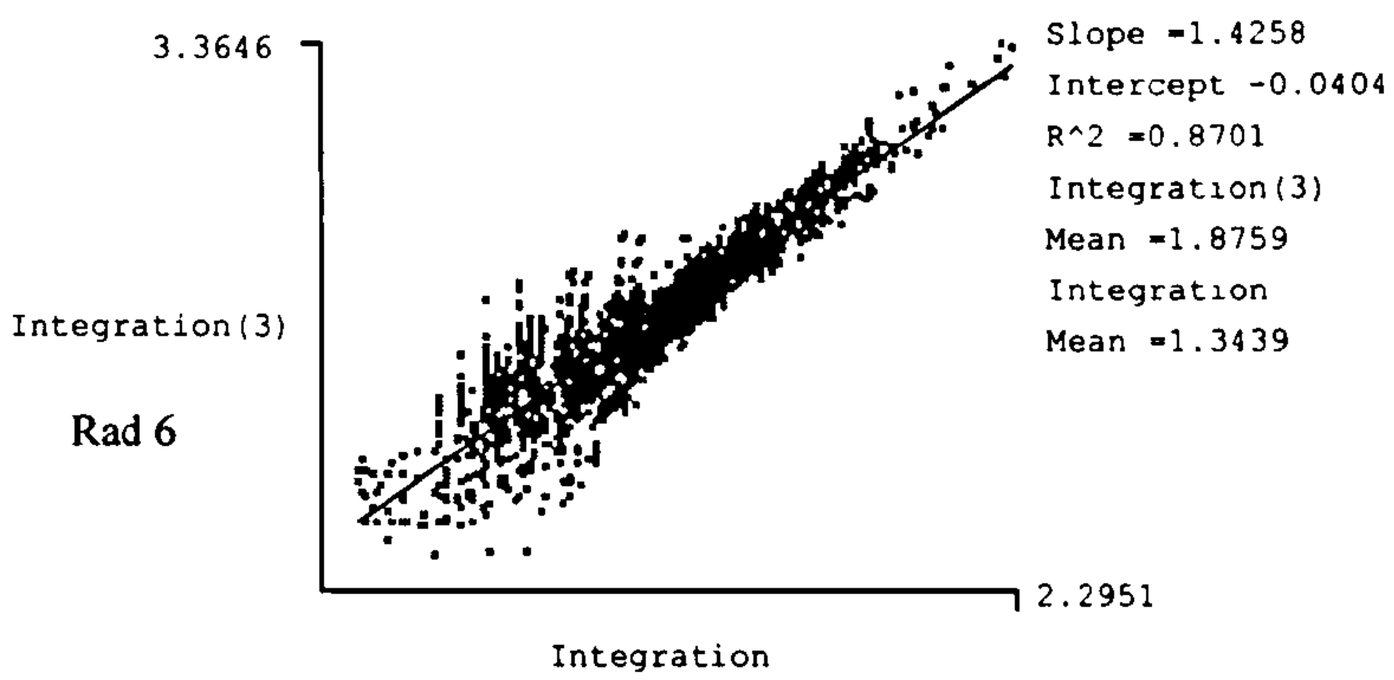


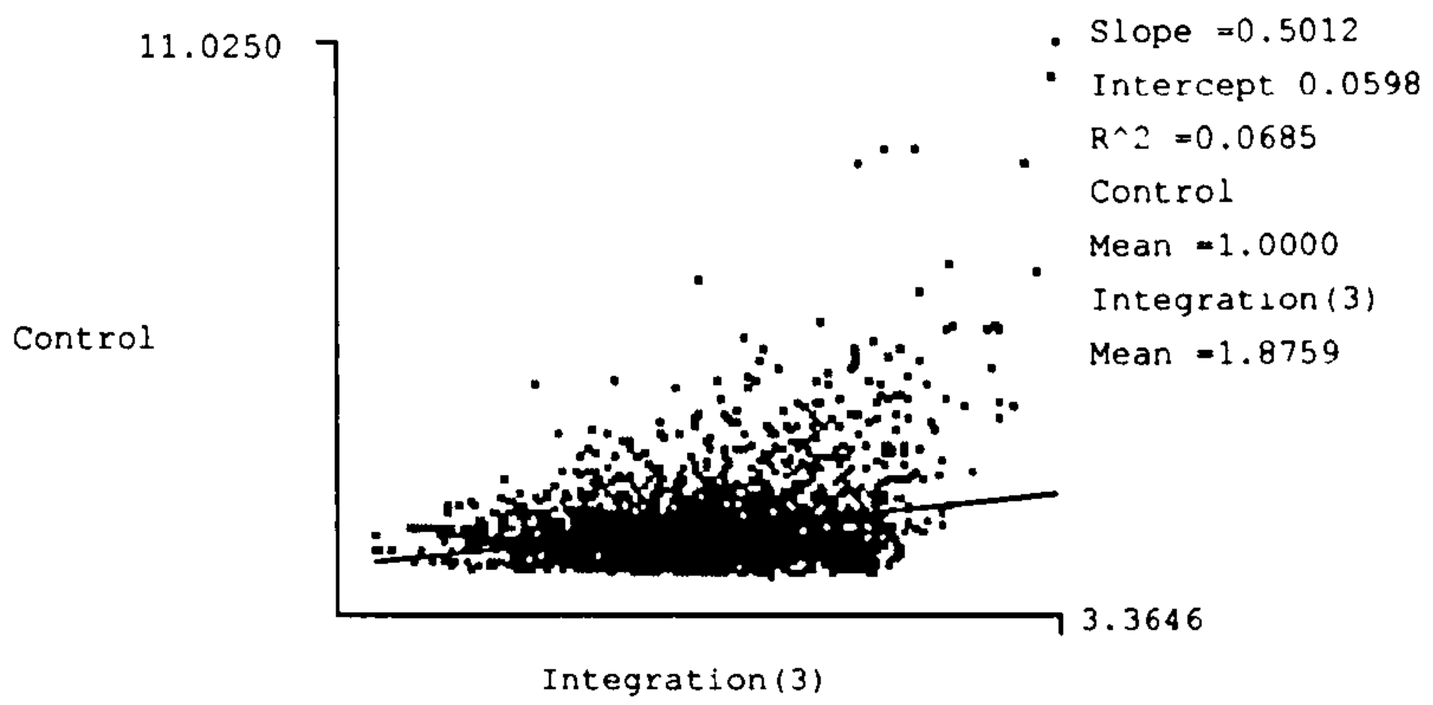
Fig.4.34: Axial analysis of Local integration (RA3-rad6) of Taipei in 1977



(1) The correlation between local integration (rad=3)and global integration of Taipei in 1977

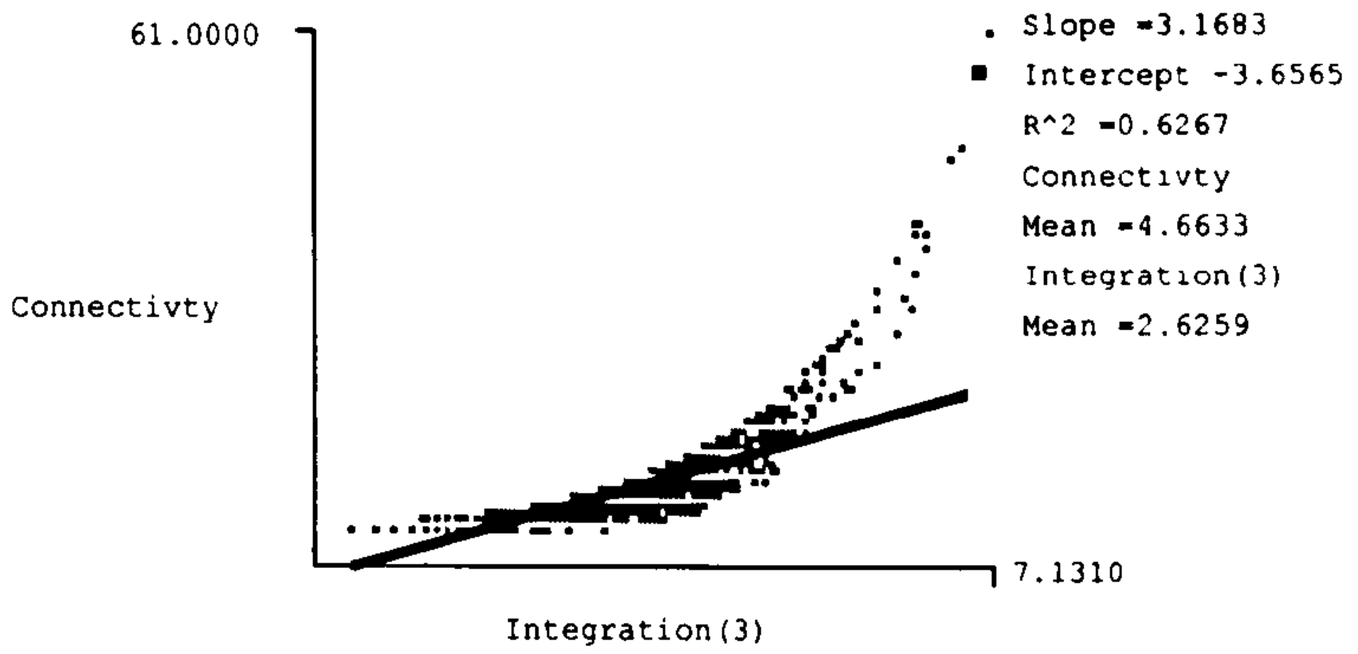


(2) The correlation between local integration (rad=6) and global integration of Taipei in 1977

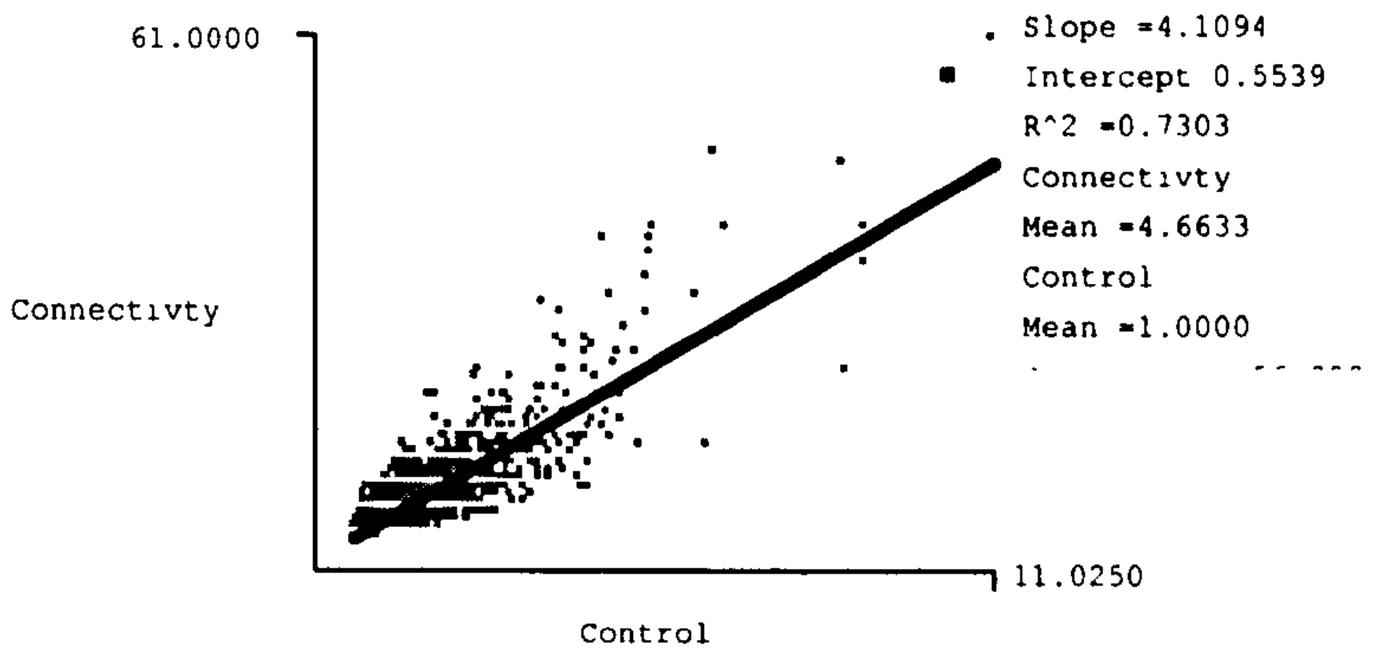


(3) The correlation between control and local integration (rad=6) of Taipei in 1977

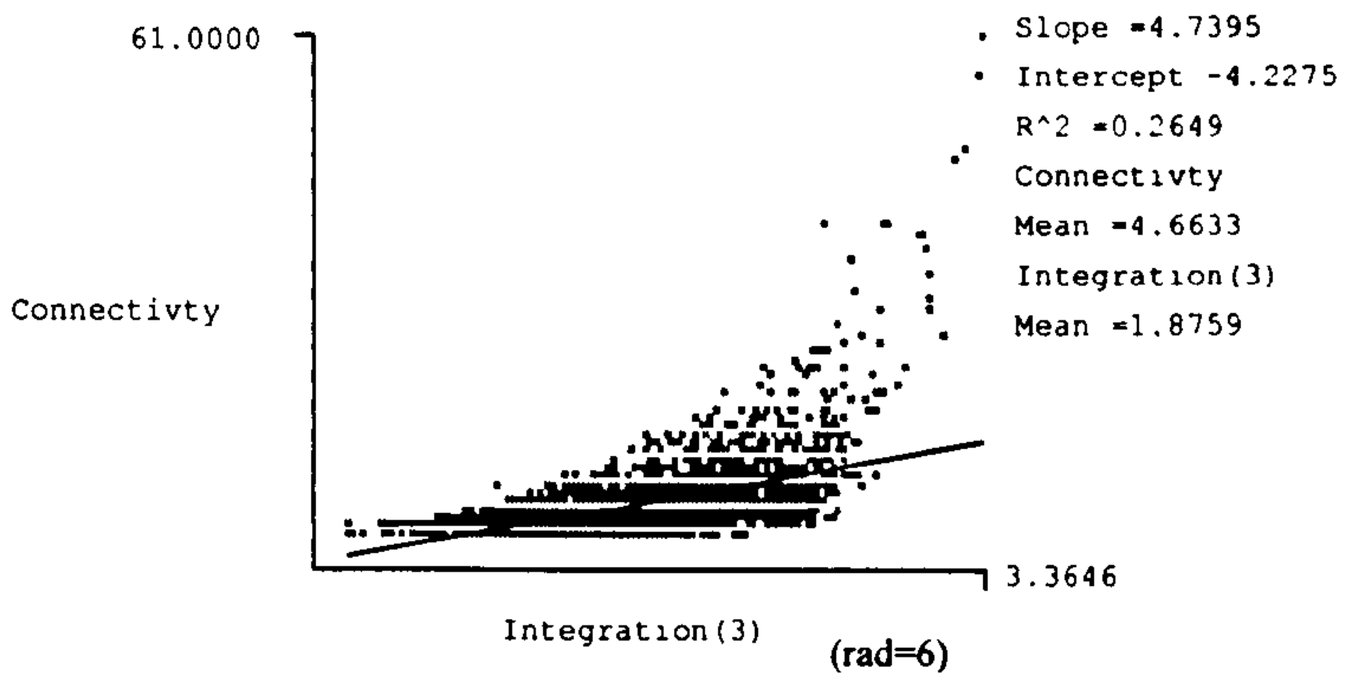
Fig.4.35a: Scattergrams of local integration within the context of Taipei in 1977



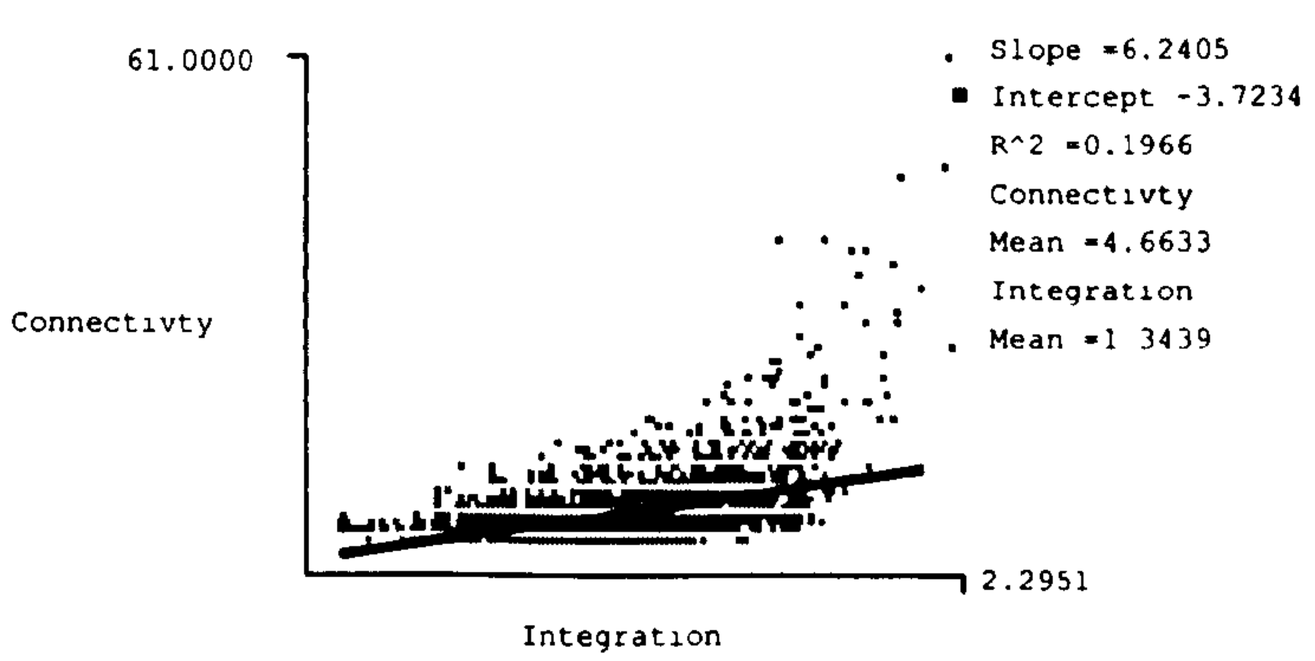
(4) The correlation between connectivity and local integration (rad=3) of Taipei in 1977



(5) The correlation between connectivity and control of Taipei in 1977



(6) The correlation between connectivity and local integration (rad=6) of Taipei in 1977



(7) The correlation between connectivity and global integration of Taipei in 1977

Fig.4.35b: Scattergrams of intelligibility within the context of Taipei in 1977

The high values of the degree of local and global integration's relationship show that the integrated spaces of the core dissociate themselves from the segregated space around the edge of the city more than the other samples of different stages. In that sense, the integrated core concentrated around its centre seems to create an inward-oriented integrated heart that is inaccessible from outside, in particular, the urban quarters at the edge of the city. This makes such quarters more isolated.

Besides, the low values of convex ringiness (0.5247 against mean value 0.5748) and the high values of axial ringiness (0.5066 against mean value 0.4419) suggest that there are quite a number of bends or curves in the urban space structure in comparison with the previous stages, except the case in late Ch'ing period.

By comparison with the axial analysis of 1956 to 1977, the mean values of global integration and local integration drop down from 1.3651 to 1.3439, and 2.6785 to 2.6259 respectively. This decrease indicates that in 1956 the spatial structure of the whole city as well as its local quarters was less integrated and more segregated than in 1977. However, this result raises a counter-argument with the previous result (in section 4.4.1) suggesting that with expansion the less integrated the city becomes. Reading the axial analysis, the expansion of quarters with angular and short street pattern spreading around the edge of the city is certainly the main cause of this difference. Besides, the integrated core of the city is obviously shifted to one side at the east in 1977 as compared with 1956. The most integrated original lines of 1956 also lose their degree of intensity and connectivity to a maximum extent in the spatial structure of the city.

4.5.2 Specific characteristics of urban space after the second modernization

The result of spatial analysis for this period reflects several specific characteristics of urban space which relate to the aspects of the structure of the urban grid, the distribution of land uses and built densities, all of which are bound up with each other in the dynamic process of the second modernization.

The structure of the urban grid is somewhat more prominent and extensive, in particular in 1977, than in the previous stages, namely the organic pattern in the Ch'ing period and the hybrid pattern in the Japanese colonial period. However, the dominant grids seem to overpower the natural features of the city, like the Tamshui and Keelung Rivers, which were closely articulated with the form of traditional settlements in the old days but have little effect on the identity of the city for those now using them everyday. In the spatial analysis of 1977 the grid pattern of Taipei reveals three overlapping hierarchies of streets from the perspective of mean depth, i.e. the depths of such lines relative to all others in the whole system.

1. A pair of major axes and grand boulevards along the W-E direction of Shin-yi Road[60] and the N-S direction of Shinshen South Road Section1 and SungChiang Road[61] has the shallowest depths of all in the spatial system (as the mean depth of the system is 5.9156 in 1977, Fig.4.41a). These roads form dominant connectors as well as bisectors to define two major sectors of the city: the dominant grid pattern at the north east; and the deformed grid pattern to the south and west of the city (Fig.4.33), and the cultural facilities attached to them, such as the Chiang Kai-Shek Memorial Hall and the National Taiwan University, which generated a symbolic image of the city at this period.
2. The grid of major streets, laid out largely during the Japanese period, form the commercial arteries and boulevards of the city that have become the new core which is shifted from the old West and spread into the Eastern District of the city. They also show relatively shallow depths in the system but are deeper than the above major axes. These streets which are lined with a mixture of tall office and residential buildings, as well as new department stores and hotels, characterize the public face of modern Taipei at this stage.
3. Finally, a web of narrow, short streets and alleys with greater depth -- for example, the average value of degree of depth for the area of Wanhua is about 8.5943 in comparison with the mean depth 5.9156 (Fig.4.44a) -- defines the third type of street system. They form the local neighbourhoods behind the main commercial outlets, offices and services, with almost four to six floors of housing above the ground. Besides, the local fabric is occasionally

[60] Shin-yi Road has the second highest value of global integration (2.2735).
[61] The N-S axis is the most integrated line with the highest values of global integration (2.2951), connectivity (56), and control (10.2611)

infilled with schools, temples, and community parks which make the local neighbourhood teem with life and dynamic activities.

The change of integration and connectivity is a reflection of the new change in complex land use pattern in the city, in contrast to the simple land use pattern in the traditional settlements where it is easier to clarify uses or activities along particular lines of movement. The third period of the first stage in 1956 and the second stage in 1977 reveal another interesting fact. When the actual distribution of pattern of use in the city is superimposed on the map showing the official zoning system, three major patterns of land use are evident.

1. The commercial use is shown concentrating at the western side of the old district and spreading within the areas of Ta-tao-cheng, Hsimenting, and a part of the old inner walled city.

2. The expansion of the grid pattern to the east is classified as a spectrum of residential use ranging from a few storey heights to high-rise buildings.

3. A mixed land use pattern is designated along the edges of major streets and boulevards in articulation with the residential quarters at the back. Most intensive commercial activities in reality spread within the new core instead of the old urban centre assigned in the zoning map. The new core is formed by the integrated lines which coincide with the location of mixed land use. This pattern actually reflects the local life of the city. The proposed land uses on the zoning map seem to be a fictional assumption that does not reflect the actual life of the city.

The densities of built forms have a multiplier effect which is generated from the relation between space structure and movement according to Hillier (1996:169-170). In that sense, the building densities follow the movement in the grid, both adapting to and multiplying its effect. In the case of Taipei, the axial analysis reflects two major different building densities following the integration patterns of the grid and deformed grid structures which do not intercept each other's domain.

4.5.3 New patterns of urban space under the authoritarian intervention

The emergence of new urban space pattern was a historical conjuncture of the political situation in that particular period. The axial and convex analyses reveal two stages of spatial evolution. The first stage was concerned with new forms of urban space which were limited to satisfying the socio-political condition and urban crisis at the early unstable era of the 1950s. Although the population in 1956 was already double that of 1945, the city boundary was almost the same as at the end of the Japanese colonial period. The second stage of urban development was involved with the rapid growth of population. More than two million people in mid 1970s put tremendous pressure on the authoritarian government in terms of the expansion and modernization of the city. Spatial characteristics of quarters, urban public space, and street space were distinct from previous periods.

- **Quarters**

The quarters generated in this period are a mixture of three hierarchical patterns: the large dominant grids formulated by the most integrated lines, in particular at the latter stage in 1977 spreading across the asymmetrical core of the city; the small grid structure imposed by the Japanese on the old quarters, and the small deformed grids at the peripheral areas of the city. These three patterns scatter into five different characteristic quarters in the city when we look at the relationship of the mean depth and scatter within the context of Taipei in both 1956 and 1977. (See table 4.6.)

The first pattern with large grids is the main new development of the residential district at the east of Chung-shan North Road in 1956 (Fig.4.40a & b) and at the eastern edge of the city in 1977 (Fig.4.42a & b). A comparison of the spatial phenomena of such quarters in 1956 and 1977 indicates different patterns. A comparison of the scattergrams shows that the quarters at the eastern edge within the context of the city in 1956 are less integrated and more segregated than in 1977, as the value of the selected integration mean of 2.7227 in 1956 is higher than the 2.5545 value in 1977. Also the pattern of the quarters in 1956 shows the lines scatter away from the regression line, implying a weaker relation between local and global integration than in 1977. The second pattern is reflected in three old quarters: at the west side of the old inner

walled city, i.e. present Wanhua and Hsimenting commercial districts (Fig.4.43 and 4.44); at the north of old inner walled city, i.e. present Ta-tao-ch'eng's mixed use residential and commercial district (Fig.4.45 and 4.46); and the remaining old Japanese residential area at the south-east side of walled city and the inner walled city area (Fig.4.47-4.48). The third pattern was the shabby residential quarter at the southeast of inner walled city along Tamshui River (Fig.4.49). The spatial phenomenon of this quarter was the result of a temporary autonomous proposal for settling immigrants from the mainland at the early stage of the 1950s. The spatial characteristic of this pattern is distinctive having the second greatest depth (6.5925 in 1956) within the context of the city. A comparison with other quarters in this period shows that the residential quarter at the southeast of inner walled city is characterised by deformed grids with short lines and disorganized patterns.

Quarters	Years	Mean Integration	Mean Depth	Type of patterns	Notes
Tataoch'eng	1956	2.7782	5.1227	2	
	1977	2.8129	4.7232		
Wanhua	1956	2.5690	5.5461	2	Wanhua has the deepest depth within the context of the city. That means it is the most segregated area in the city.
	1977	2.8129	8.5943		
Inner Walled City	1956	2.6521	4.4615	2	
	1977	2.5631	4.5446		
Eastern edge 1 (core)	1956	2.7227	4.6490	1	The eastern edge quarters in 1956 became the integration core of the city in 1977.
	1977	2.9497	3.8693		
Eastern edge 2	1956	---------	---------	1	Not yet developed in 1956
	1977	2.5545	5.2178		
Southeast quarters	1956	2.5803	6.5925	3	
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Table 4.6: The values of selected areas' mean integration and mean depth within the context of the city in 1956 and 1977.

•Urban public space

The other new distinctive urban public space in this era was the construction of Chinese style and grand scale memorial hall and square within the context of the city. Chiang Kai-shek Memorial Hall and Sun Yat-sun Memorial Hall are the key examples of these spaces. It seems that the developments of these public spaces were basically related to the Chinese ideology but without any relationship to contemporary life. The formal regular floor plan and use of Chinese elements contributed to the shaping of urban space into a ceremonial plaza instead of a recreational and leisure plaza for the public. Besides, some of the original urban land proposed for parks and boulevards in the Japanese era was converted to other uses: for example, the proposed No.8 Park was changed into the present Military General Hospital at Roosevelt Road; and the proposed linear 50m width No.5 Boulevard was transformed into the current Regent Hotel. The axial analysis interestingly reveals that the location of the Chiang Kai-Shek Memorial Hall fits within the context of the city (mean integration of selected elements 2.0968 against mean integration of the city 2.6259) and articulates with the existing urban orders instead of its grand scale image (Fig.4.50a and b).

4.5.4 Hidden rules and critical ideas behind the authoritarian intertwined urban space

It seems that in this period the effect of urban planning on the spatial development of the city was not very effective, even with authoritarian control. Public urban spaces such as grand squares and boulevards were built with political purpose and Chinese ideology instead of the public interests. Therefore, authoritarian urban space, created as a result of modernization without any close relationship to local society seemed to be lost space compared with urban spaces in other earlier stages. The axial and convex analyses along with statistical justification support this claim.

4.6 A New Spatial Order in the present Taipei

For the past fifty years, it is obvious that the development of the Taipei Basin expanding outward from the old central area to the outskirt regions of the city has dramatically transformed the spatial organization of the whole city environment. The building of new expressways and

Mass Transit Railway system overlaying the old urban structure have made a substantial structural change to the old Western zone in relation to the whole spatial structure of the city. The period after the lifting of martial law in the year of 1987 was the most flourishing period of Westernisation and urban development. For instance, the style and image of the city reflected a blend with the Occident, or a mixture of the Occident and the Orient. In addition, the redevelopment of old military dependents' village has transformed this unique cultural landscape from an isolated small pocket neighbourhood into an integrated one within the city context as a whole. These transformations have created a new spatial order for the city as the following analysis.

The spatial analysis of urban space in 1998 has indicated that the further development of the spatial quarters at the fringe areas of the city has formed a new urban spatial order with mixed pattern of deformed grid at the fringe area and grid iron-like urban structure in the core area. The axial maps of Taipei in 1998 have explained this structural transformation from the results of global and local integration analysis, which well illustrate the part-whole structure of the city, as compared with previous stages. The mean global integration value of 1998 (0.9386 against average mean value 1.0097) in Table 4.5 is lower than in the previous periods, except for the earliest development stage of the city in 1895 and 1925. The results show that the spatial pattern of Taipei city in 1998 has more global integration than the years of 1945, 1956 and 1977, but it has a lesser degree of integration than the periods in 1895 and 1925.

It is interesting to see that the expansion of the fringe areas in the city has significantly increased the intensity of the global core, which diffuses outward as compared with the axial maps in the previous three stages. In the global integrated axial maps (Fig.4.36a), two most integrated axes predominantly control the spatial structure of 1998: the horizontal axis, Nanjing East Road (H1); and the vertical axis, Fushing South and North Road (V1). Both axes absorb most of the lines and create many intersections between the lines across the grid-like urban structure of the core area. Indeed, the principle horizontal axis (H1) connects between the old quarters at the west and the new deformed grid residential quarters at the northeast edge of the city, while the vertical axis (V1) is a principle connector to link all accesses to the new residential quarters at the south of the city. The global core spreads outward from these two

axes to form three layers of spatial structure from the perspective of depth value. These three layers include:

1) The congregation of major streets' space confined to the first inner layer has the most accessibility.
2) The blocks between those most integrated streets form the second middle layer.
3) The urban fringe areas, which are relatively deep and segregated from the integrated core area, comprise the third outer layer in the city.

The local integrated axial map with radius 8 (Fig.4.37a) shows a value of mean integration (RA8= 1.5070 against the average of mean values 1.5043) almost the same as the average of total mean values. The local integration cores have loose domain patterns of local areas as compared with traditional settlements in the past. The local integration core tends to become a less explicit form in a whole which is totally dominated by the global core of the spatial structure in the city. In effect, the urban structure of the present-day Taipei city reflects, as Hillier (1996:134-5) points out, more global and therefore more in-out movement and through movement in between the core area and the local area at the fringe rather than the internal movement within the local areas. This effect explains the relationships between the levels of local and global integration which governs the natural interface between the local and global scales of space. Evidence from reading the degree of 'intelligibility'[62] of the system and the local area effect[63] shows a formation of new structural order, which is confirmed by the high value of the degree of local integration with radius-8 against global integration (where R^2=0.8310 against the average of total mean value 0.6517; see Table 4.5). The scattergram in Fig.4.37b shows the points forming a good linear tight scatter around the regression line across at an angle of almost 45 degree from bottom left to the top right and reflects a strong correlation from the edge-to-centre integration core structure of the city, and therefore good intelligibility.

By comparison with the depth of the integration core, Fig.4.38a shows the relative order of six periods in terms of their mean depth against the average of total mean value 7.7076.[64]

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[62] Intelligibility is defined as the correlation between connectivity and global integration. (See Hillier, 1996:129.)

[63] The local area effect is defined as the correlation between local integration (in this case radius-8) and global integration. (See Hillier, 1996:171.)

[64] The depth is a nonmetric distance measure about the properties of segregation or integration in the spatial system. Mean depth is a general indicator of the depth of a network system from a carrier related to other spaces. (Hillier, 1996)

(See also Table 4.5.) It indicates the degree and distribution of spatial integration in each period. The 8.1621 value of mean depth in 1998 is the second deepest of the whole spatial system in comparison with the other periods and reflects its uneven development of deformed grids with short lines and disorganized pattern at the fringe area and the iron grid-like structure in the core area. The relative high value of this mean depth means that the expansion of quarters with angular and short-street patterns spreading in the fringe areas of the city has increased the depth of the core of the city. It is a diffusing effect of the global integrated core which creates the wheel that makes rather strongly segregated zones close to the centre (Hillier, 1996). The resulting form of the city pattern is an overall integrated one in comparison with previous stages, except in the early periods of 1895 and 1925. The spatial order reflects the shift of spatial power from the old urban centre at the west to the new urban centre at the east in the process of transformation, but it is clearly regulated by the central core of the post-colonial global grid at the east with control over spatial patterns of deformity in the fringe area.

The change of spatial structure in the present-day urban layout of Taipei also reflects the changing position of the centrality of the city over time and indicates the whole spatial configuration would be maintained in a stable condition if the spatial structure is balanced between the core and the fringe areas. It is also interesting to see that there is some consistency in the pattern of urban function in centrality (i.e. commercial and political centre), as we contrast the configurational analysis of these periods to the historical information of the city. The present layout of the city is more 'integrated' than in the previous period from 1945 to 1977, as it has greater total depth from all spaces to all others and a lower value of intelligibility caused by the segregated local quarters at the fringe with distinctive short lines and disorganized deformed grid pattern. The scattergram below (Figure 4.38c) shows that the correlation between axial depth and local integration (radius-3) is weak in context (R^2=0.2197).

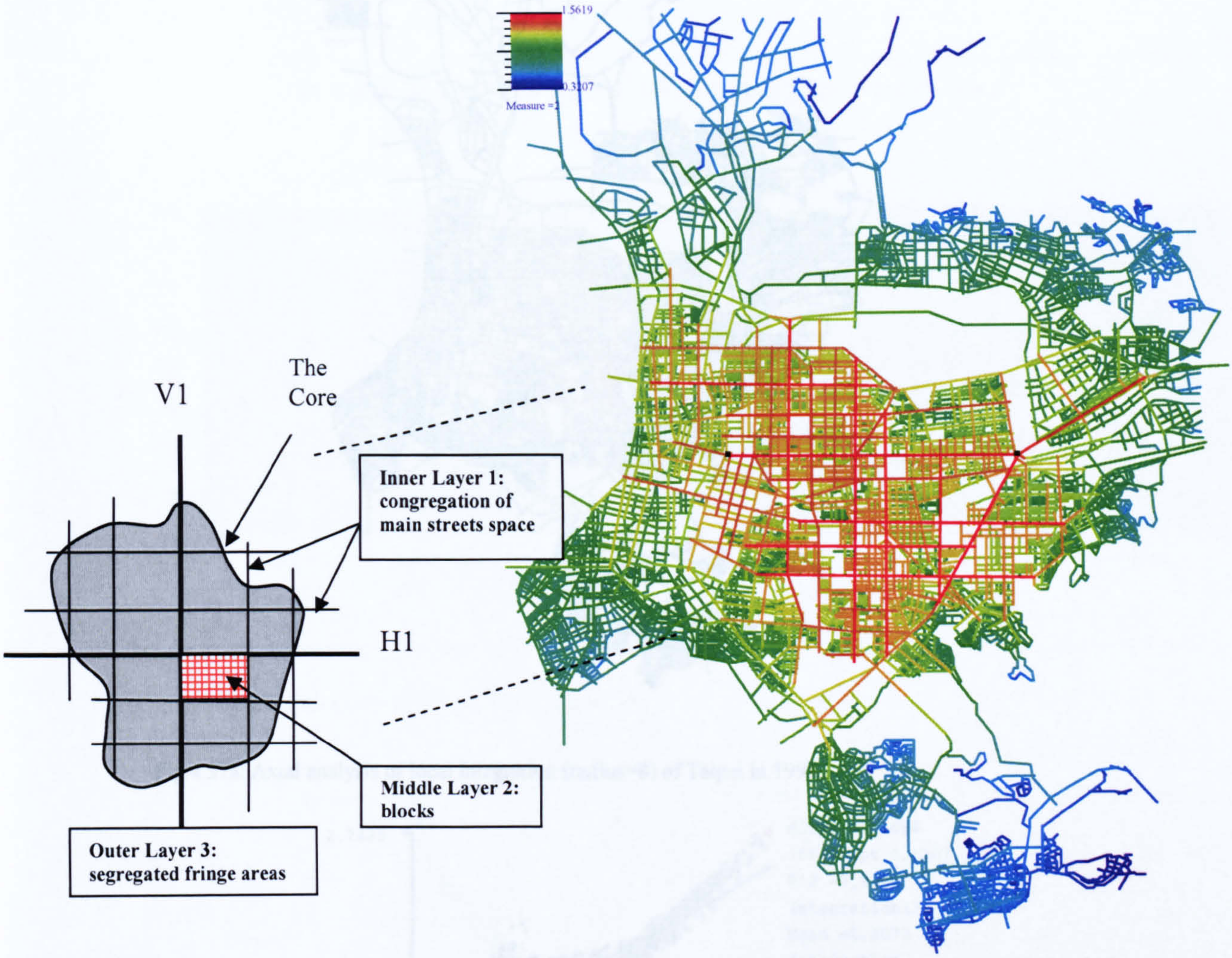


Fig.4.36a: Axial analysis of global integration (RAn) of Taipei in 1998

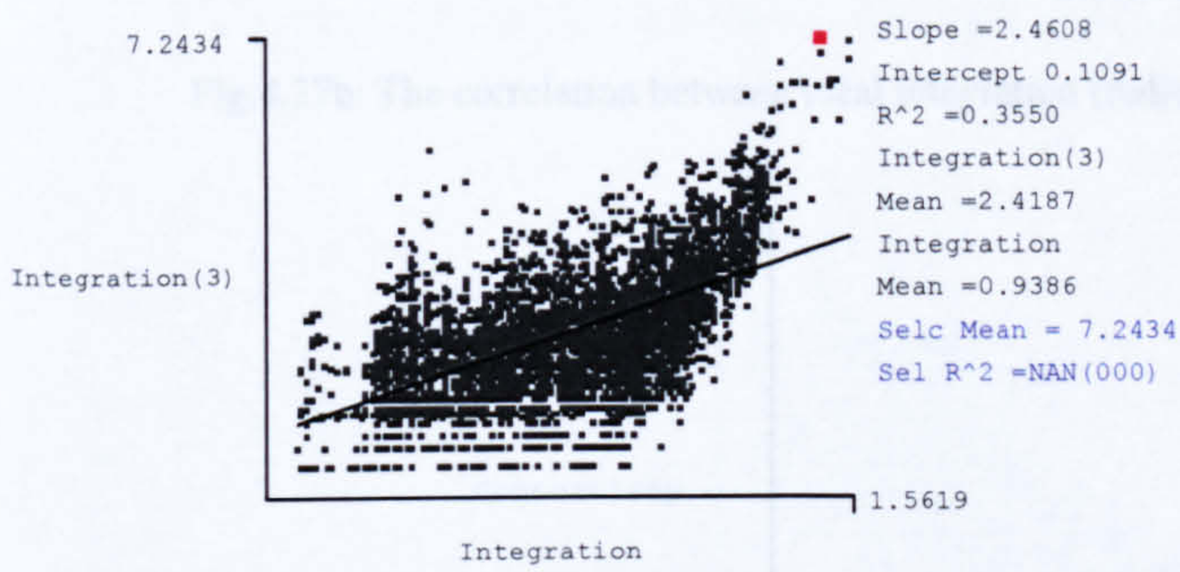


Fig.4.36b: The correlation between local integration (radius-3) and global integration (radius-n) of Taipei in 1998

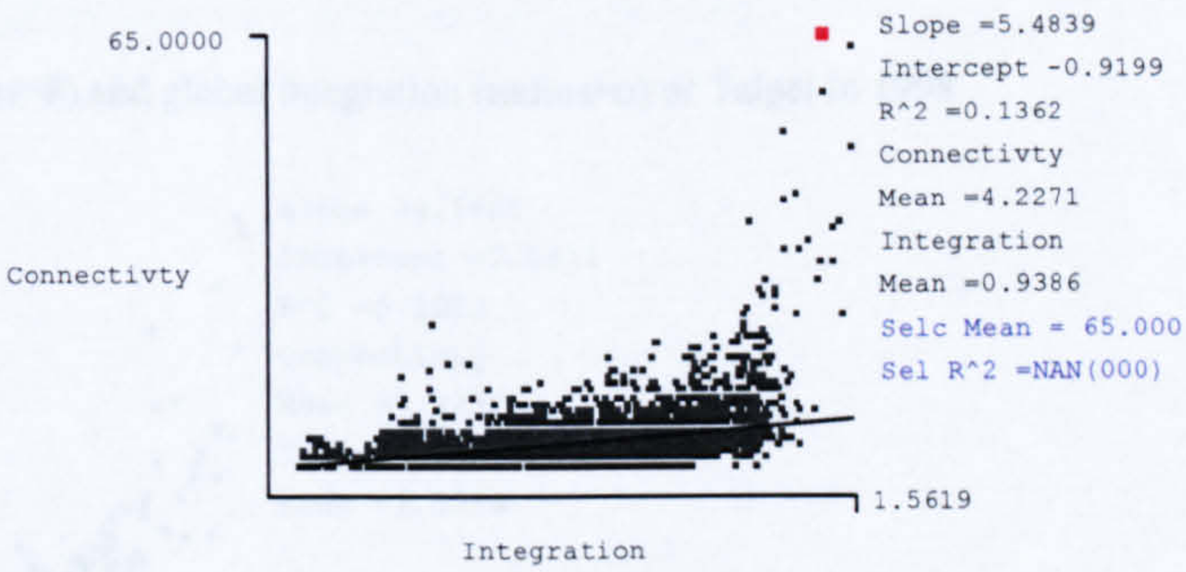


Fig.4.36c: The correlation between connectivity and global integration (Rad=n) --- the intelligibility study of Taipei in 1998

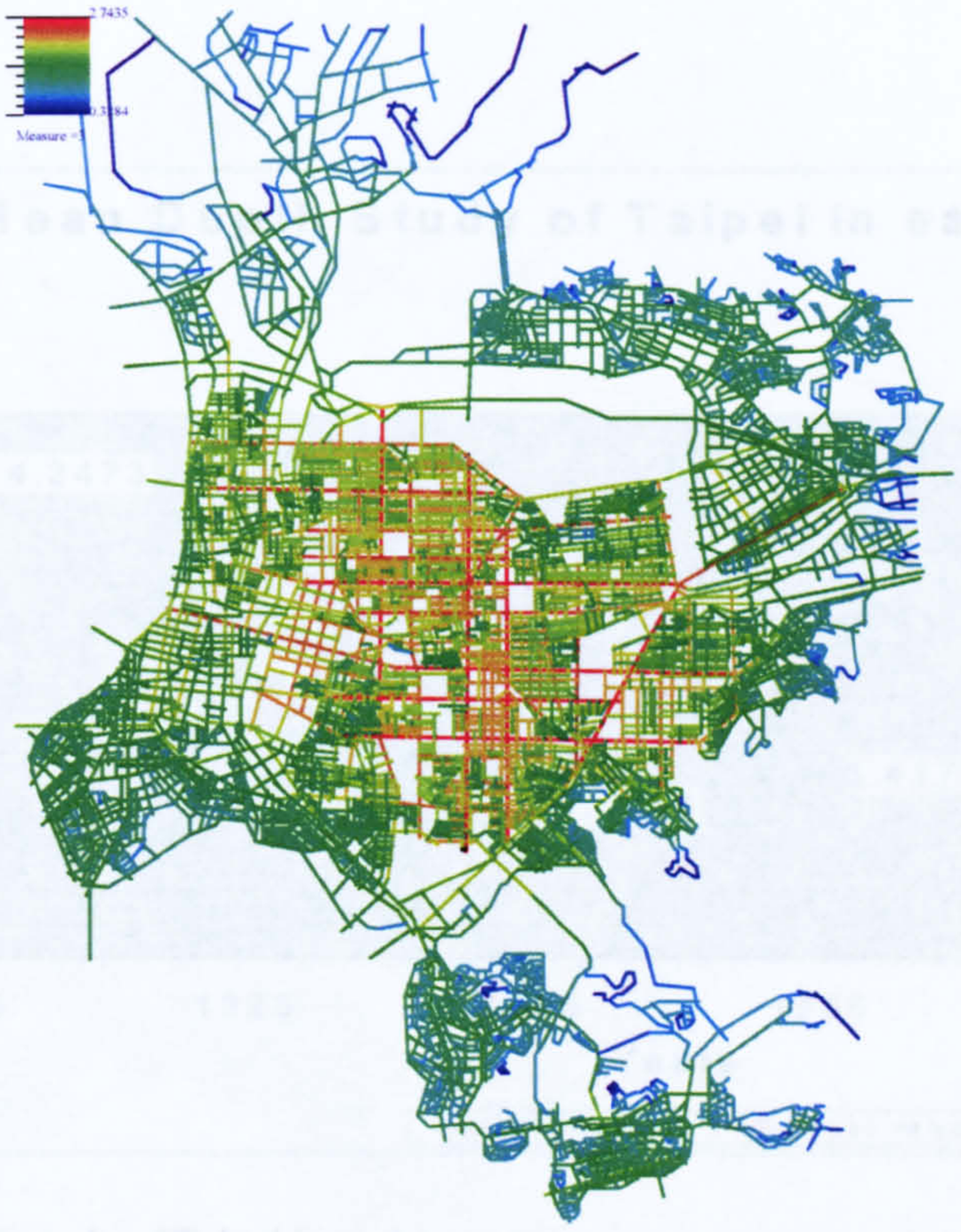


Fig.4.37a: Axial analysis of local integration (radius=8) of Taipei in 1998

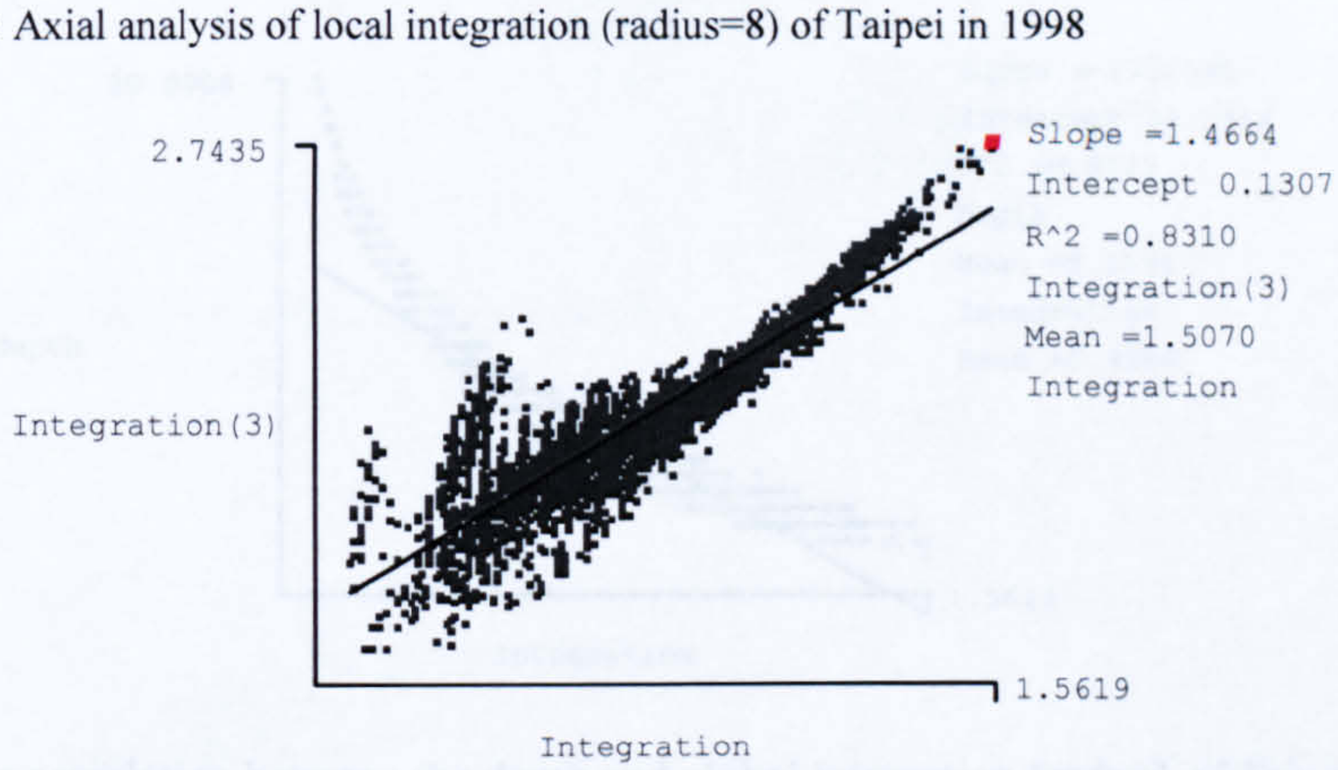


Fig.4.37b: The correlation between local integration (radius=8) and global integration (radius=n) of Taipei in 1998

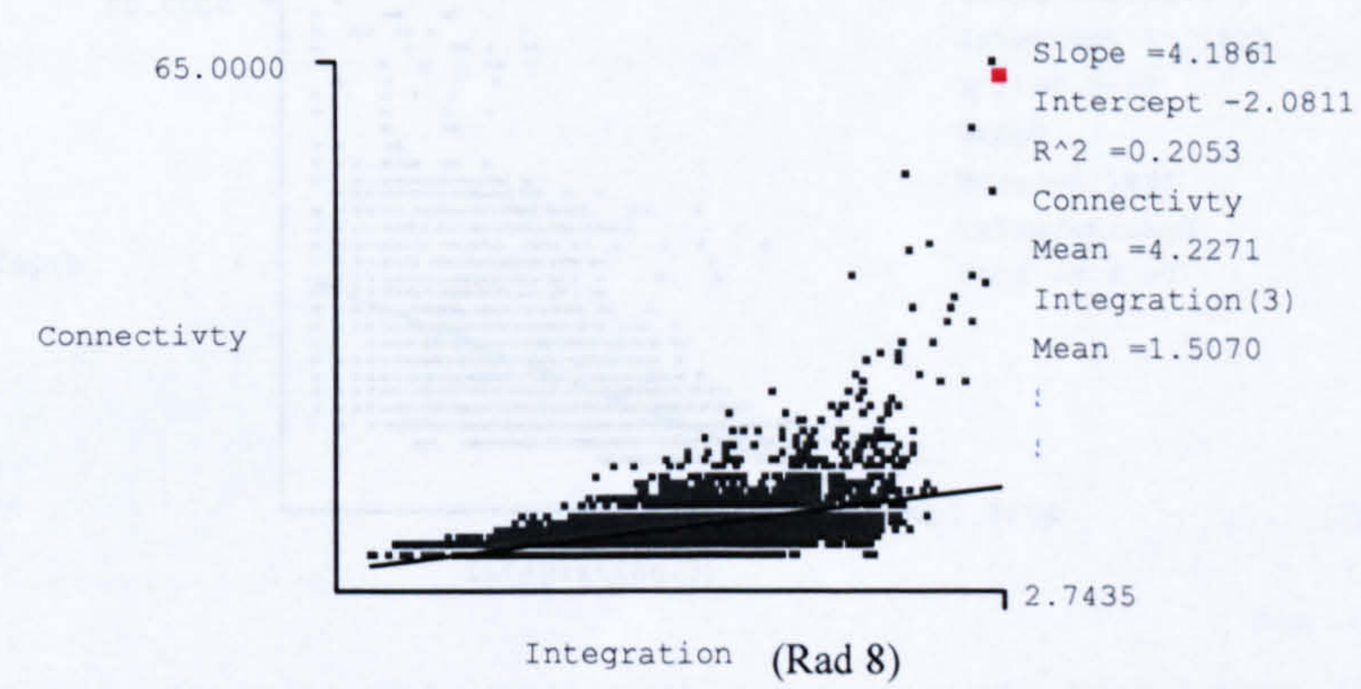


Fig.4.37c: The correlation between connectivity and local integration (radius =8) --- the intelligibility study of local areas within the context of Taipei in 1998

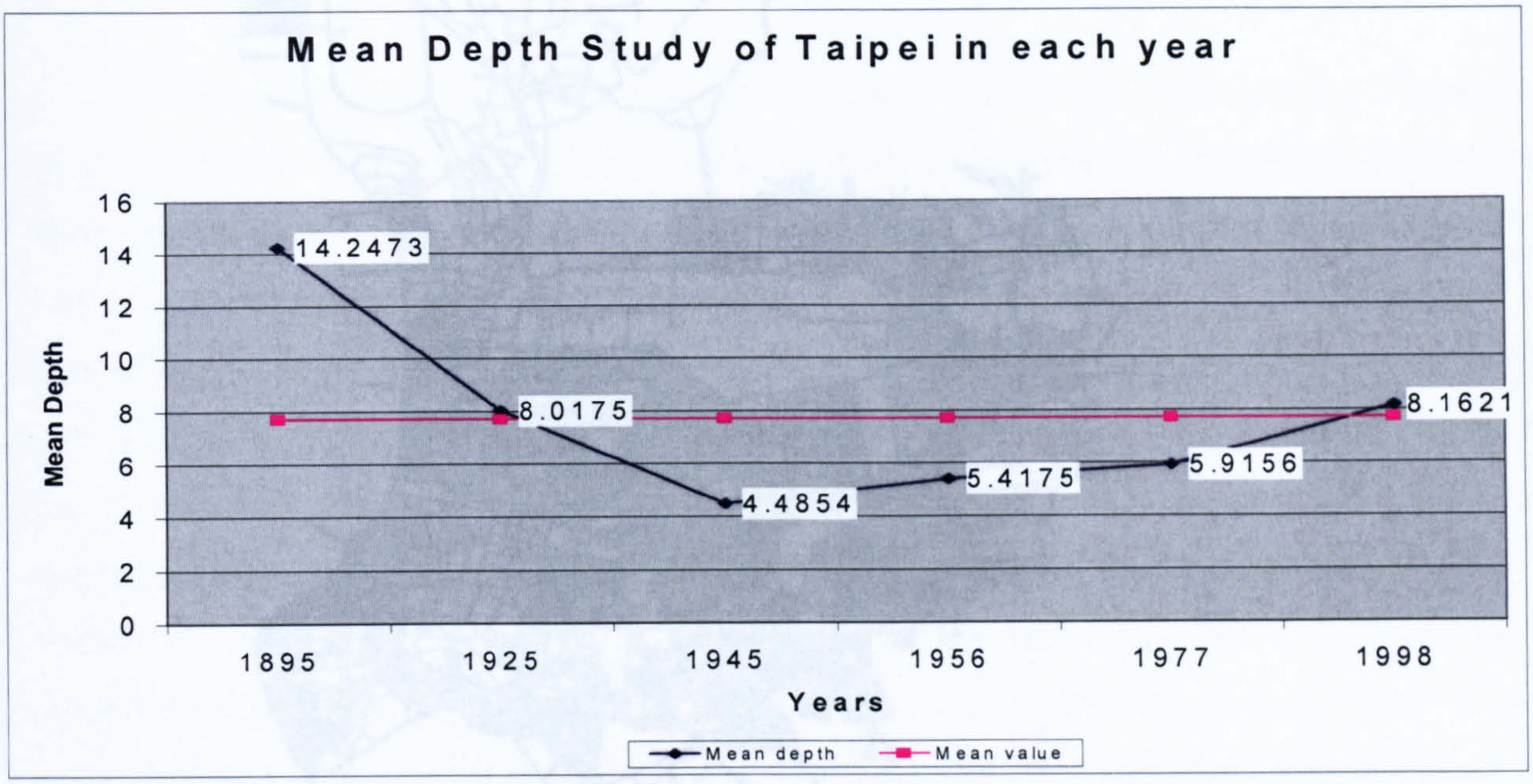


Fig.4.38a: Means depth study of Taipei in each year.

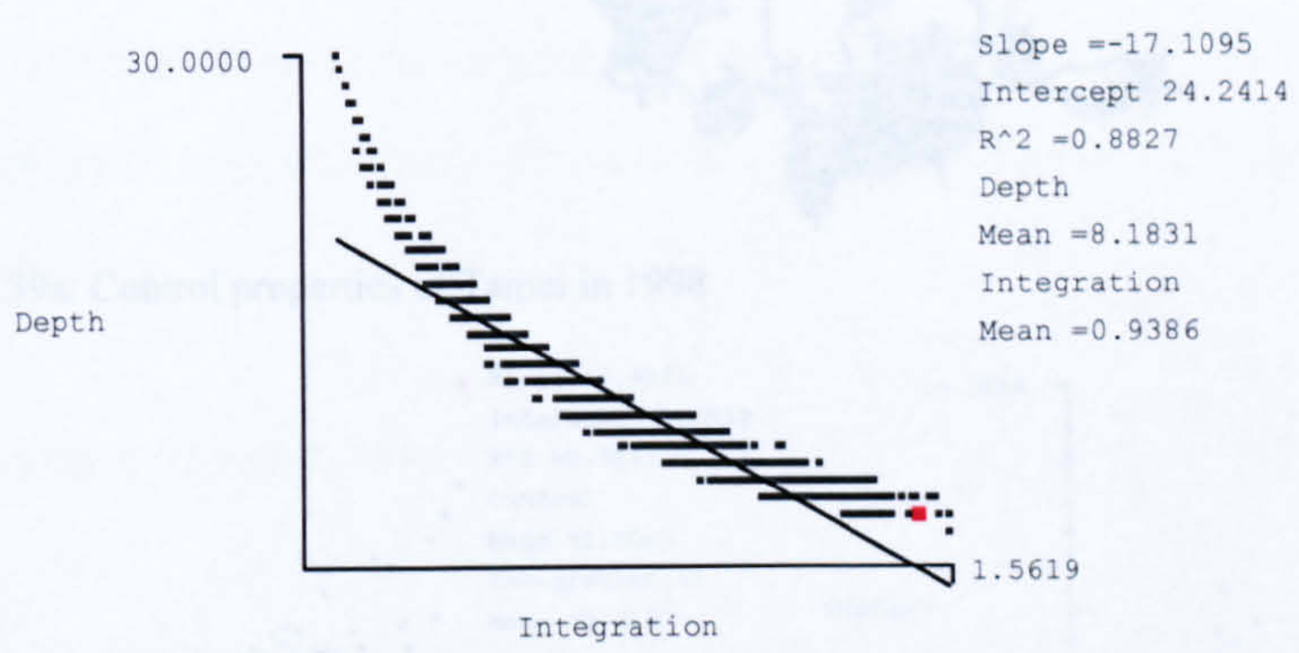


Fig.4.38b: The correlation between the depth and global integration (rad=n) of Taipei in 1998.

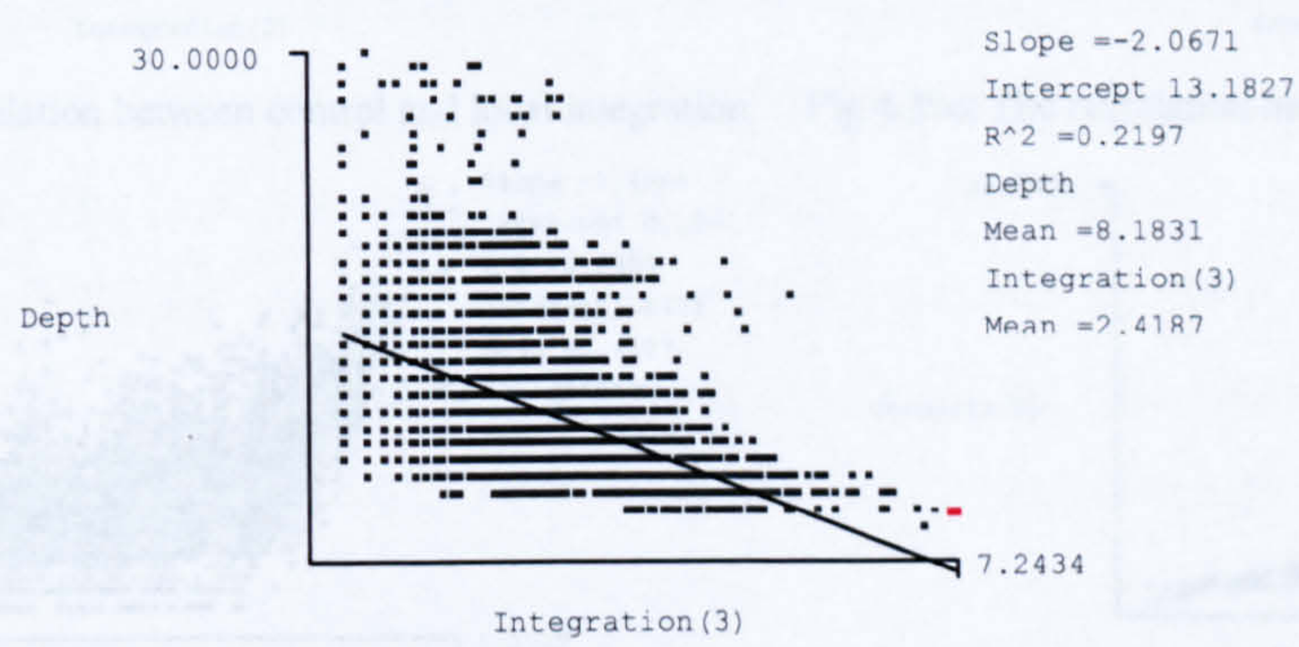


Fig.4.38c: The correlation between the depth and local integration (radius3) of Taipei in 1998.

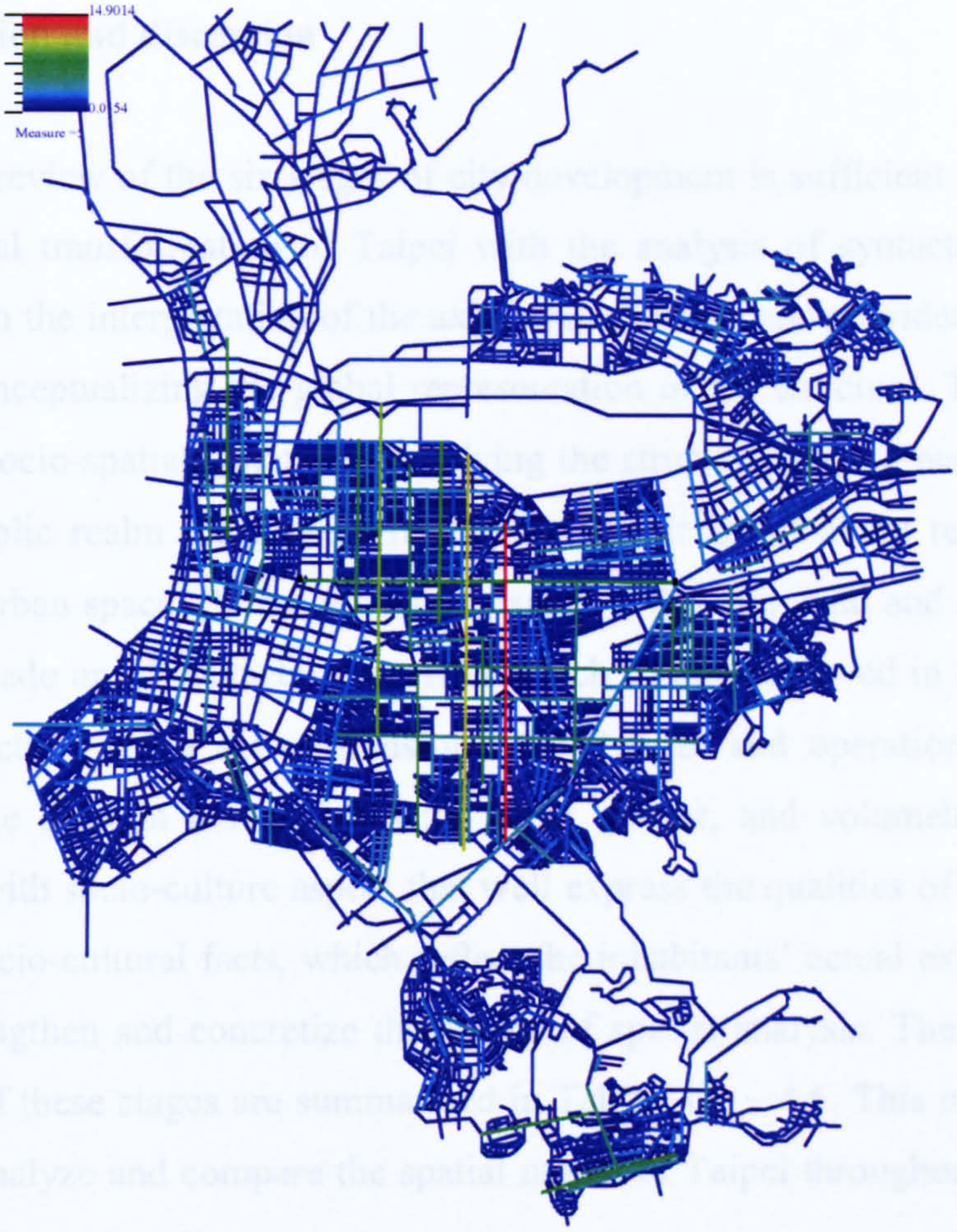


Fig.4.39a: Control properties of Taipei in 1998

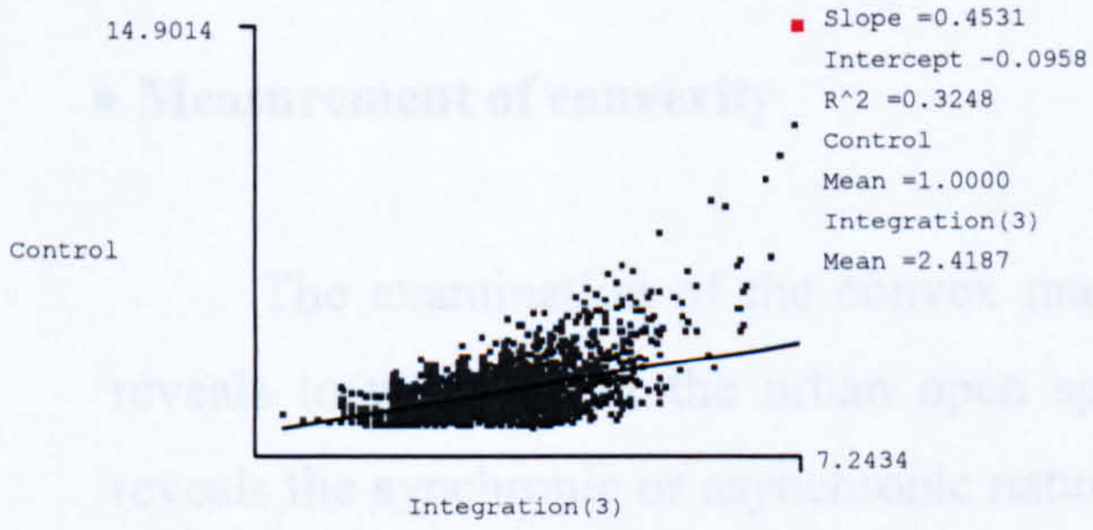


Fig.4.39b: The correlation between control and local integration

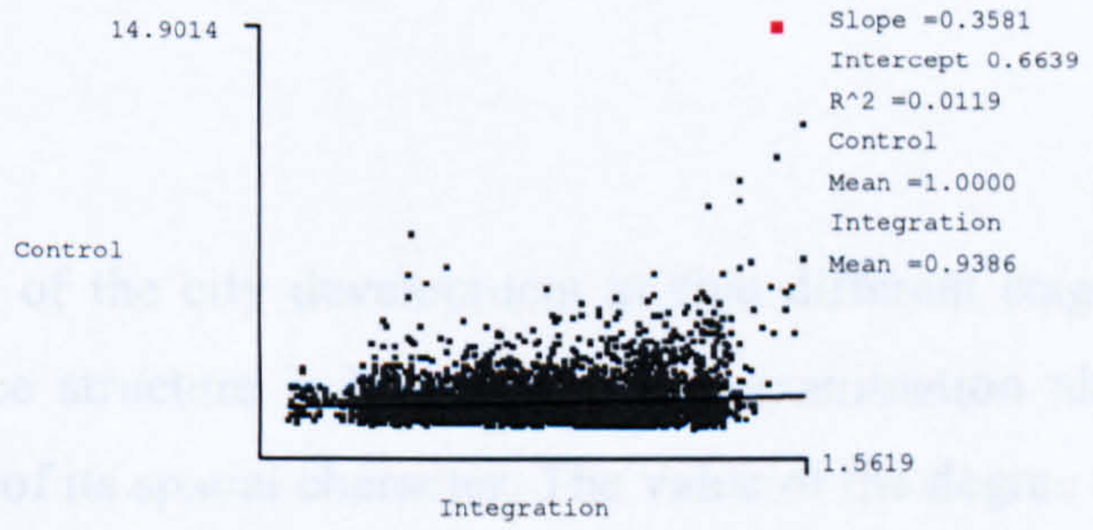


Fig.4.39c: The correlation between control and global integration

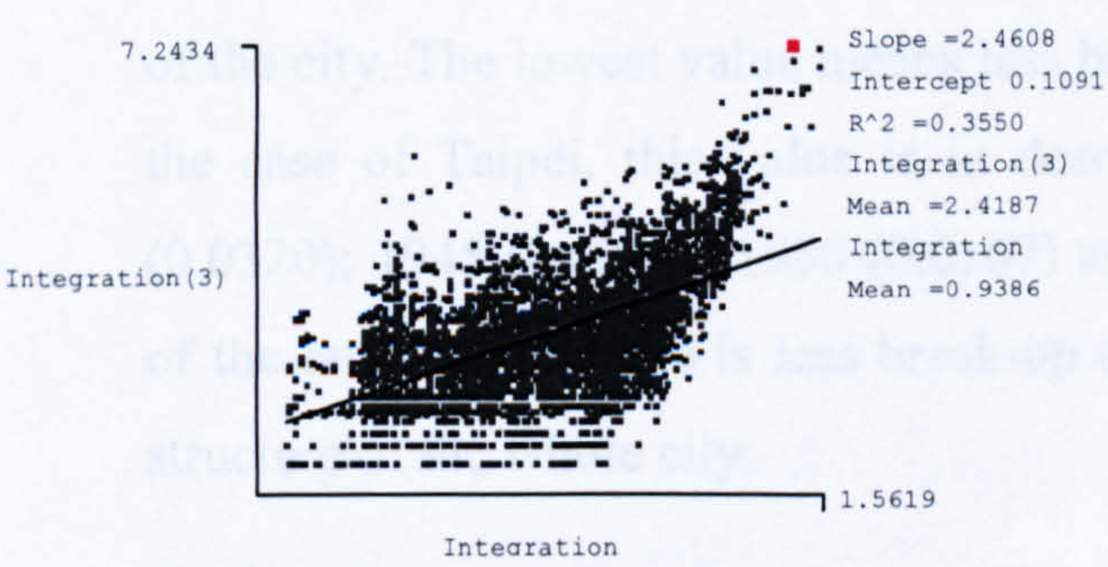


Fig.4.39d: The correlation between local integration (radius-3) and global integration (radius-n) of Taipei in 1998

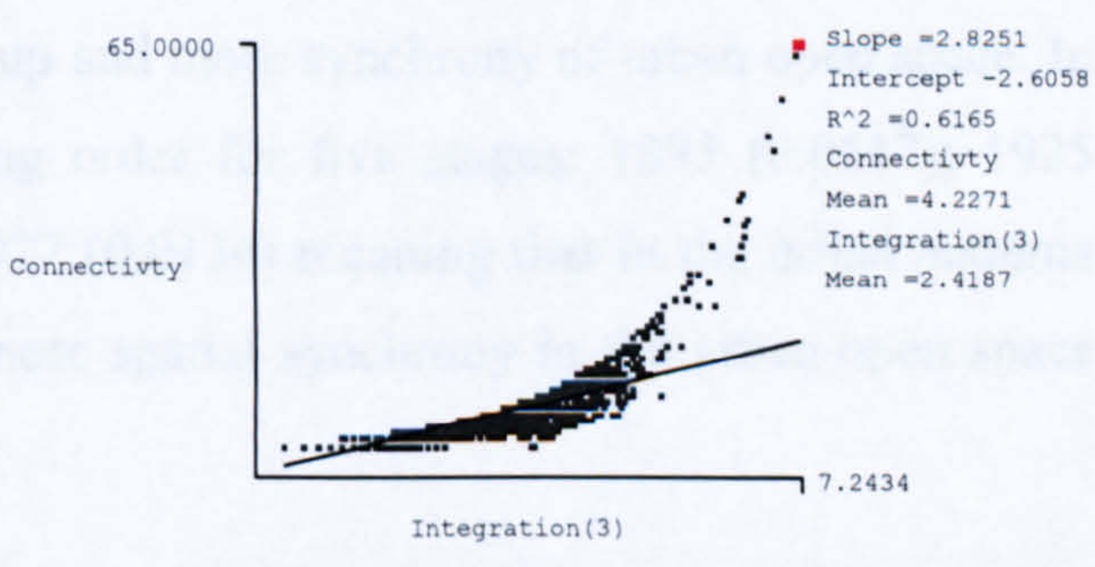


Fig.4.39e: The correlation between connectivity and local integration (radius-3) --- the intelligibility study of Taipei in 1998

4.7 Conclusion and discussion

The review of the six stages of city development is sufficient to introduce a full picture of the spatial transformation of Taipei with the analysis of syntactic properties. The spatial analysis with the interpretation of the axial and convex maps provides a critical comprehensive view for conceptualizing the global representation of the structure. The analysis also helps to review the socio-spatial genotype underlying the structure beyond our experience and showing how the public realm integrates with human life. It is not about retrieving the 'ideology' of traditional urban space. Rather the study explores, through axial and convex analysis, the deep structures made up of syntactic properties which can be reviewed in an actual environment, or surface structure, via a set of transformational rules and operations. Besides, the syntactic properties lie deep in association with linear, planar, and volumetric aspects which all are embedded with socio-culture aspect that well express the qualities of urban space. Evidence of historical socio-cultural facts, which reflect the inhabitants' actual experience of places, would help to strengthen and concretize the results of spatial analysis. The analyses of the syntactic properties of these stages are summarized in Tables 4.2 ~ 4.5. This methodology enables us to construct, analyze and compare the spatial model of Taipei throughout the course of its spatial development.

- **Measurement of convexity**

The examination of the convex maps of the city development at five different stages reveals to what extent the urban open space structure is broken up. The examination also reveals the synchronic or asynchronic nature of its spatial character. The value of the degree of convex articulation will genuinely reflect the nature of urban space pattern within the context of the city. The lowest value means less break-up and more synchrony of urban open space. In the case of Taipei, this value is in descending order for five stages: 1895 (0.0617); 1925 (0.0320); 1945 (0.0246); 1956 (0.0167) and 1977 (0.0134) meaning that in the urban patterns of the later stages there is less break-up and more spatial synchrony in the urban open space structure of the whole city.

- **Measurement of axiality**

The measurement of axiality is basically related to the values of the degree of axial articulation and grid axiality. These values will reflect the degree of axial integration of convex spaces and also reveal the characteristic of spatial pattern in the city. In general, values of axial articulation below 0.0343 (mean value) indicate less break-up and axial development in the street structure of the urban texture, as in 1945 (0.0314); 1956 (0.0253); and 1977 (0.0139) compared with the early organic settlements in 1895 (0.0540) and the hybrid pattern in 1925 (0.0469). Moreover, the analysis of the spatial patterns of the city can be examined from the interpretation of the degree of integration.

- **Measurement of integration**

The axial maps help us to reveal the spatial pattern of the city from the analysis of the degree of integration lines, which in turn designate either the integrated cores or the segregated quarters within the context of the city. In the axial map, bold red lines often represent the core while dark blue lines represent the most segregated space. The form of the core gives significant indication of the morphological structure of the city, for example, the shape of the city with either symmetrical or asymmetrical spatial layouts. According to Hillier (1996), the most integrated lines are normally clustered at the centre where the strongest intensity of activities takes place. In this study, the mean values of global integration for the early stages of the city such as in 1895 (0.3403) and 1925 (0.6925) are lower than the values of the later stages in 1945 (1.3778); 1956 (1.3651); 1977 (1.3439) and 1998 (0.9386). This comparison shows that the earlier settlements are as a whole more integrated and less segregated than the modern city.

- **Discussion**

The analysis demonstrates the strong logic behind the global spatial organization of the old settlements. It also illustrates that the spatial structure and the location of the main elements and functions of the old settlement have stronger relationship in comparison with the modernized city. It is evident that the new spatial structure of the modern city formulates a new order which is incompatible with the old one. It destroys the integrated core of the old city. The

displacement of commercial activities from the old small miao-ch'eng pocket space to the edges of new streets and the poor spatial and physical qualities in the depth of the old core indicate that the spatial destruction causes social and economic side effects. The two different spatial orders distinguish each other in the whole urban system. They show an isolation or over-segregation between the central parts and the peripheral regions of the city, as the major effect of physical change. This evidence confirms that the application of a grid pattern cannot fully revitalize the life of the old core but produces deterioration as reflected in the case of Western District (such as Hsimenting and Mengchia areas). Besides, the formation of collective form is a more effective mode of urban integration which deeply reflects the character of local cultures. The analysis has also indicated that the large scale networks of the modern city continually gain at the cost of weakening the local network. It reveals the characters and qualities of urban space through configurations from which one can read the spatial transformation of the city at the global level rather than the local level. And these configurations, according to Hillier (1984), are predictable in the real world that links space back to society.

Table 4.7: Comparative analysis of urban spatial patterns at five different development stages in Taipei

Spatial Characters \ Years	1895	1925	1945	1956	1977	1998	Note
Synchronous			•	•	•	•	High convex articulation values indicate more breakup of spatial structures and therefore more spatial asynchronous values in the urban pattern
Asynchronous	•	•					
Regular		•	•	•	•	•	Low convex deformation in the grid structure indicates regular urban layout
Irregular	•						
Grid		•	•	•			Low grid convexity values indicate high deformation in the grid structure and reflect organic spatial patterns or vice versa.
Organic/deformed grid	•				•	•	
Axial			•	•	•	•	Low axial articulation values indicate a higher degree of axiality where the higher values reflect more break-up in the axial structure of the urban spatial pattern
Non-axial	•	•					
Symmetry			•	•		•	The form of the integration core and the location of integrated lines imply the symmetry or asymmetry of urban spatial patterns.
Asymmetry	•	•			•		
Deadend/Cul-de-sac	•	•					The ratio of thoroughfares to dead ends in the urban spatial structure indicates the degree of urbanization in the city.
Thoroughfare			•	•	•	•	
High integration	•	•				•	Low integration values indicate more integration of urban patterns in the spatial system of the city. i.e. high integration.
Low integration			•	•	•		
High intelligibility			•	•			High values indicate stronger correlation between connectivity and integration with geometric patterns.
Low intelligibility	•	•			•	•	

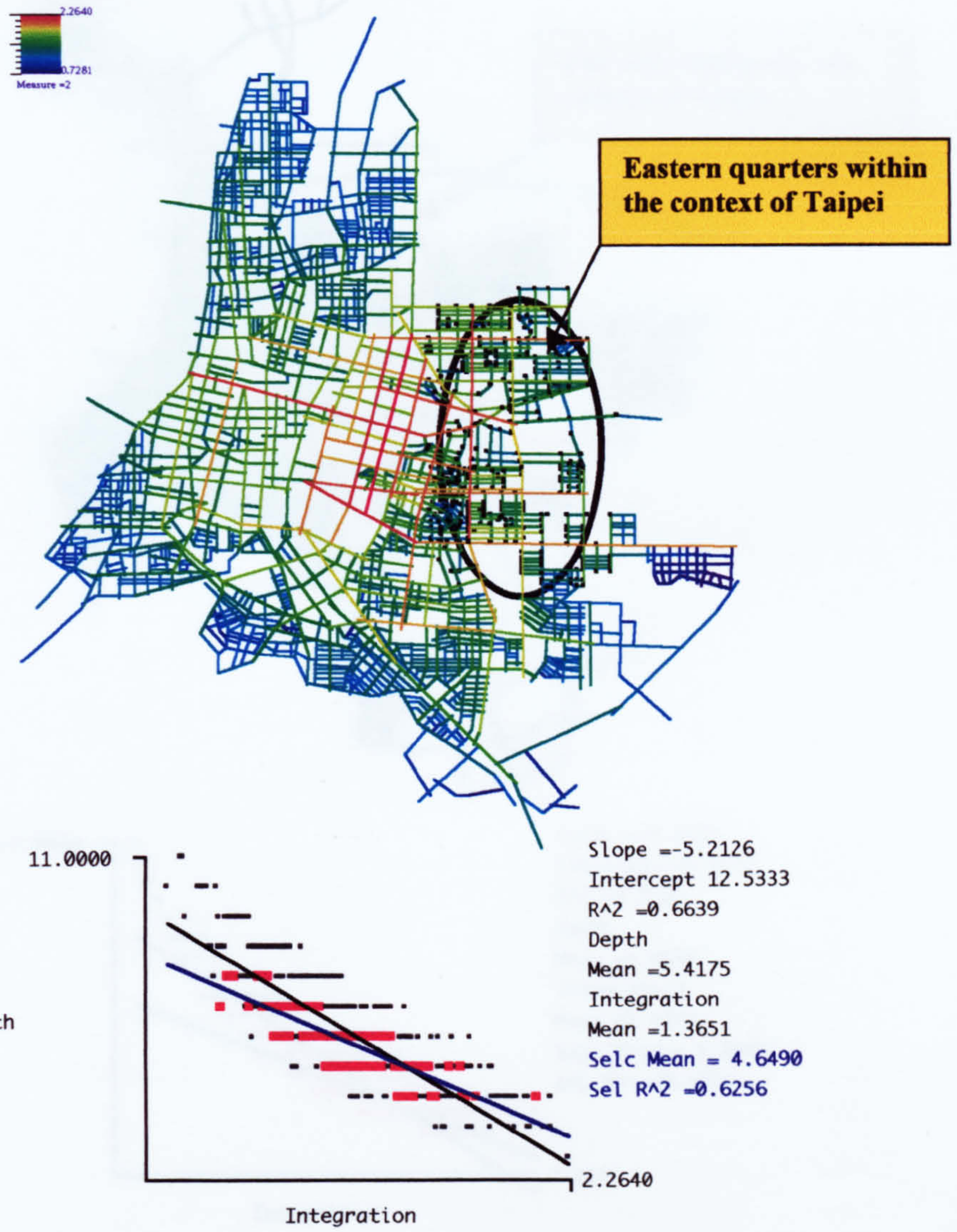


Fig.4.40a: The mean depth of eastern quarters (the red dots) within the context of Taipei in 1956

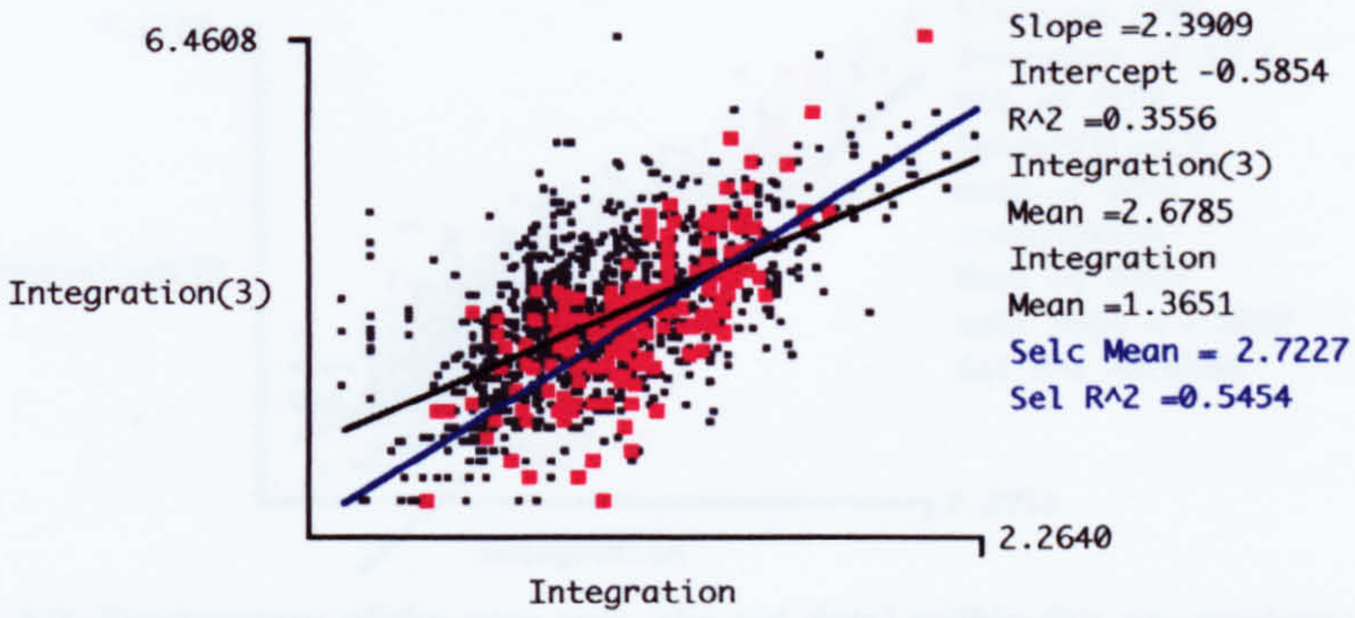


Fig.4.40b: Scattergrams of eastern quarters (the red dots) within the context of Taipei in 1956

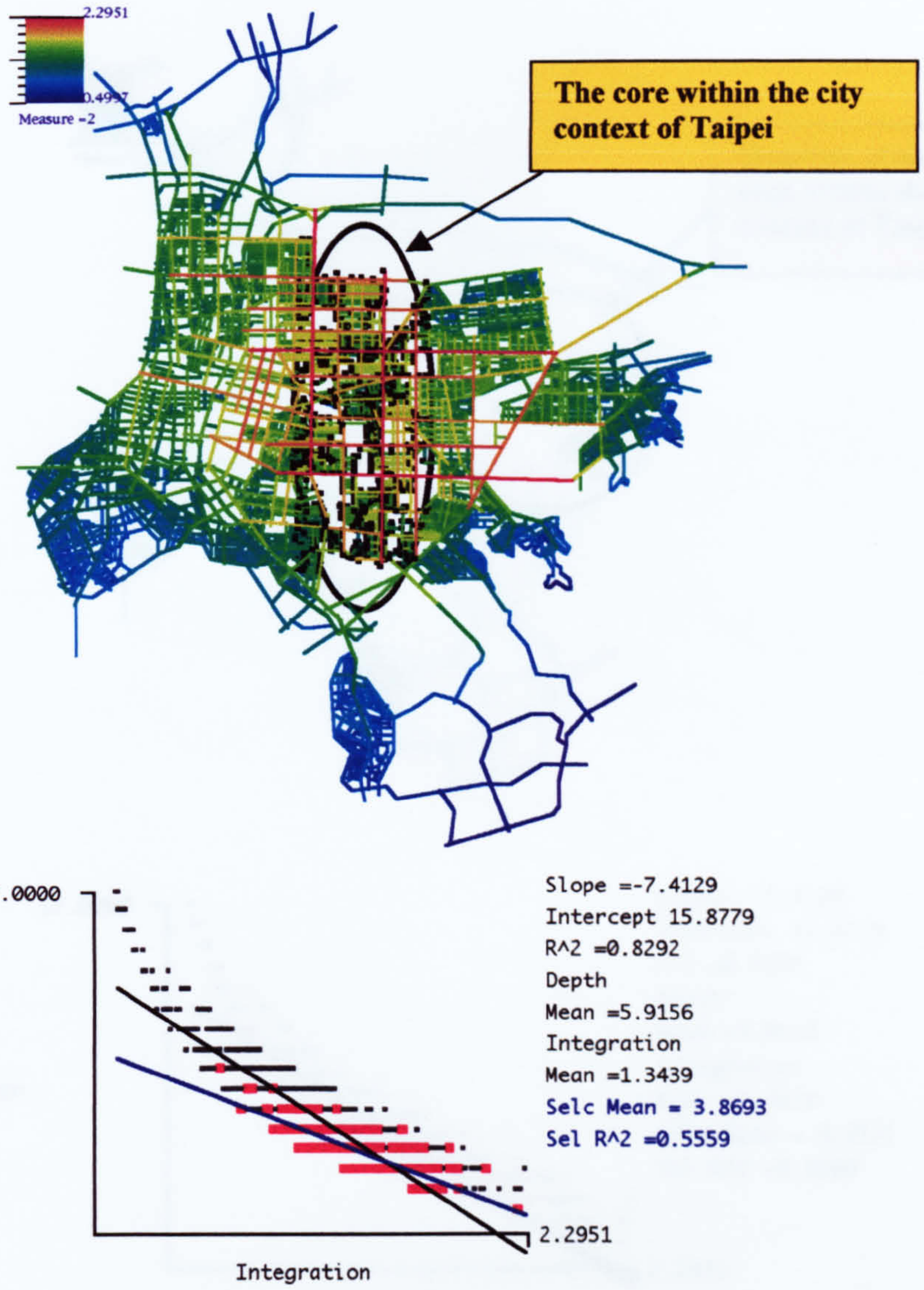


Fig.4.41a: The mean depth of the core area (the red dots) within the city context of Taipei in 1977

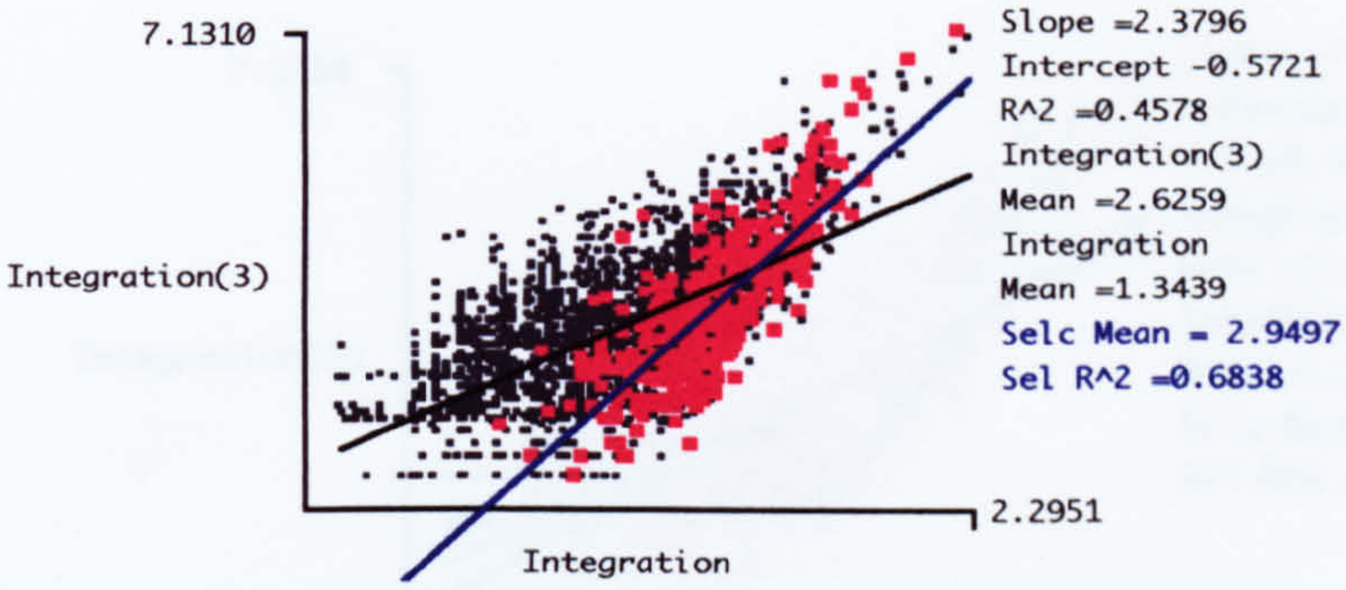


Fig.4.41b:Scattergram of the core area (the red dots) within the city context of Taipei in 1977

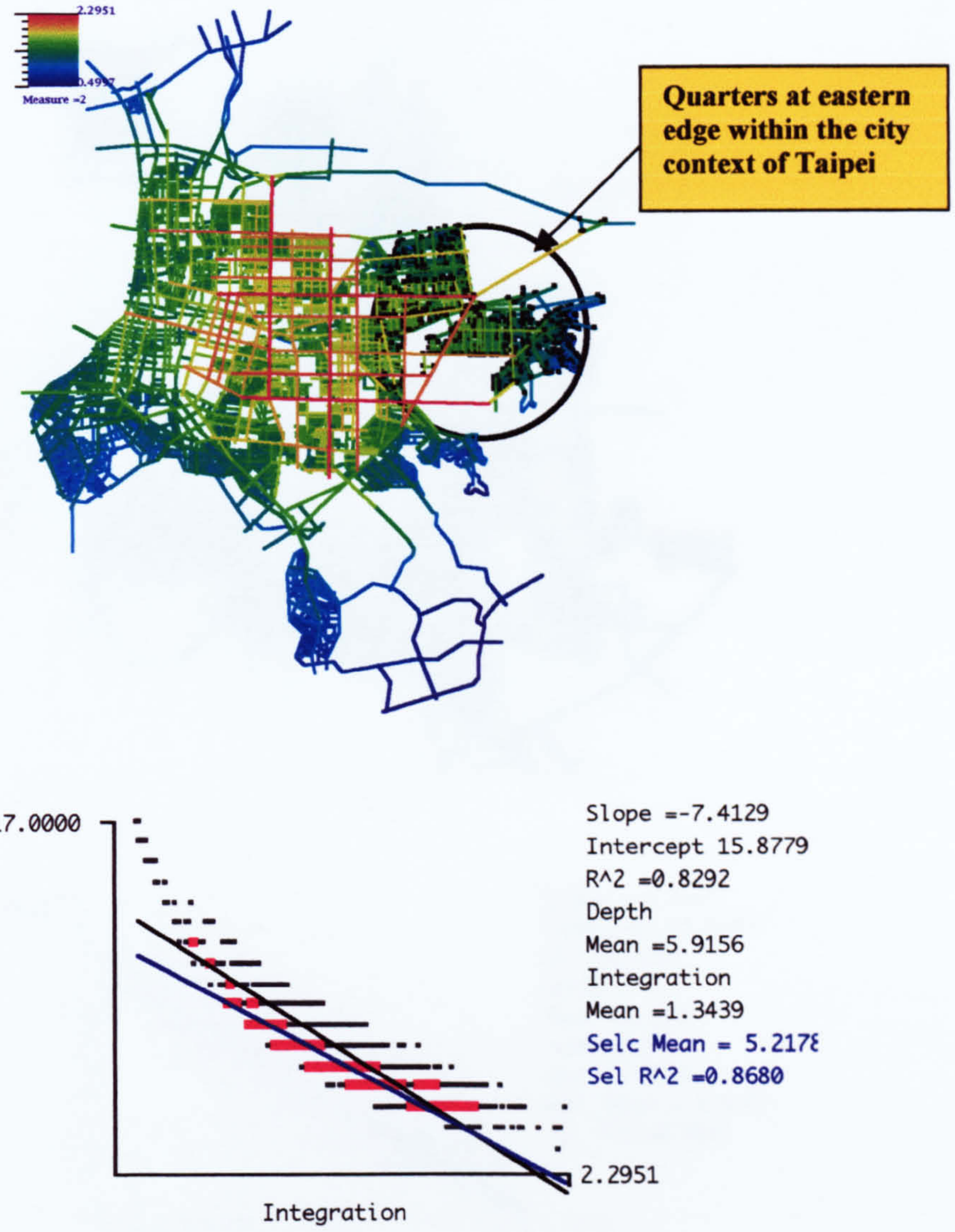


Fig.4.42a: The mean depth of quarters at Eastern edge (the red dots) of Taipei in 1977

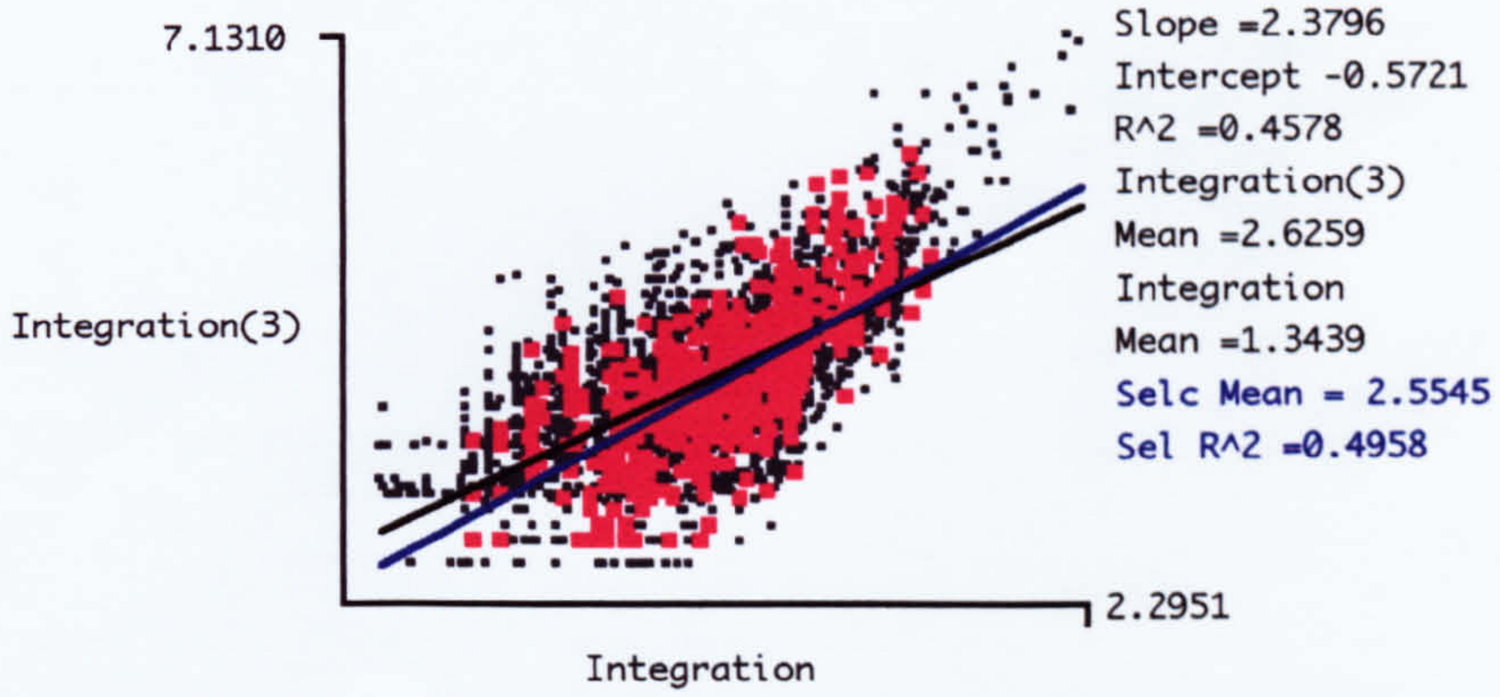


Fig.4.42b: Scattergram of eastern edge quarters (the red dots) within the city context of Taipei in 1977

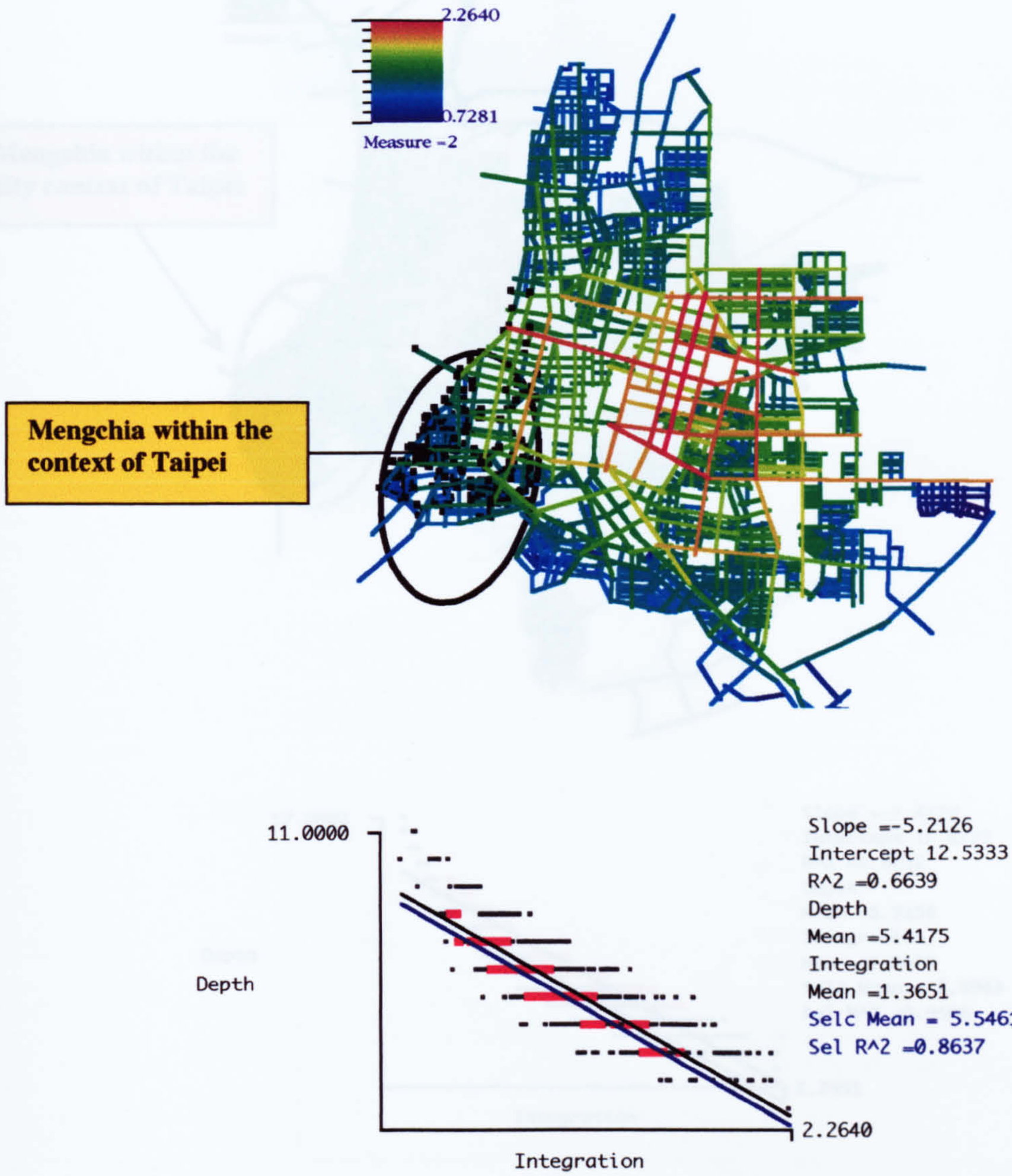
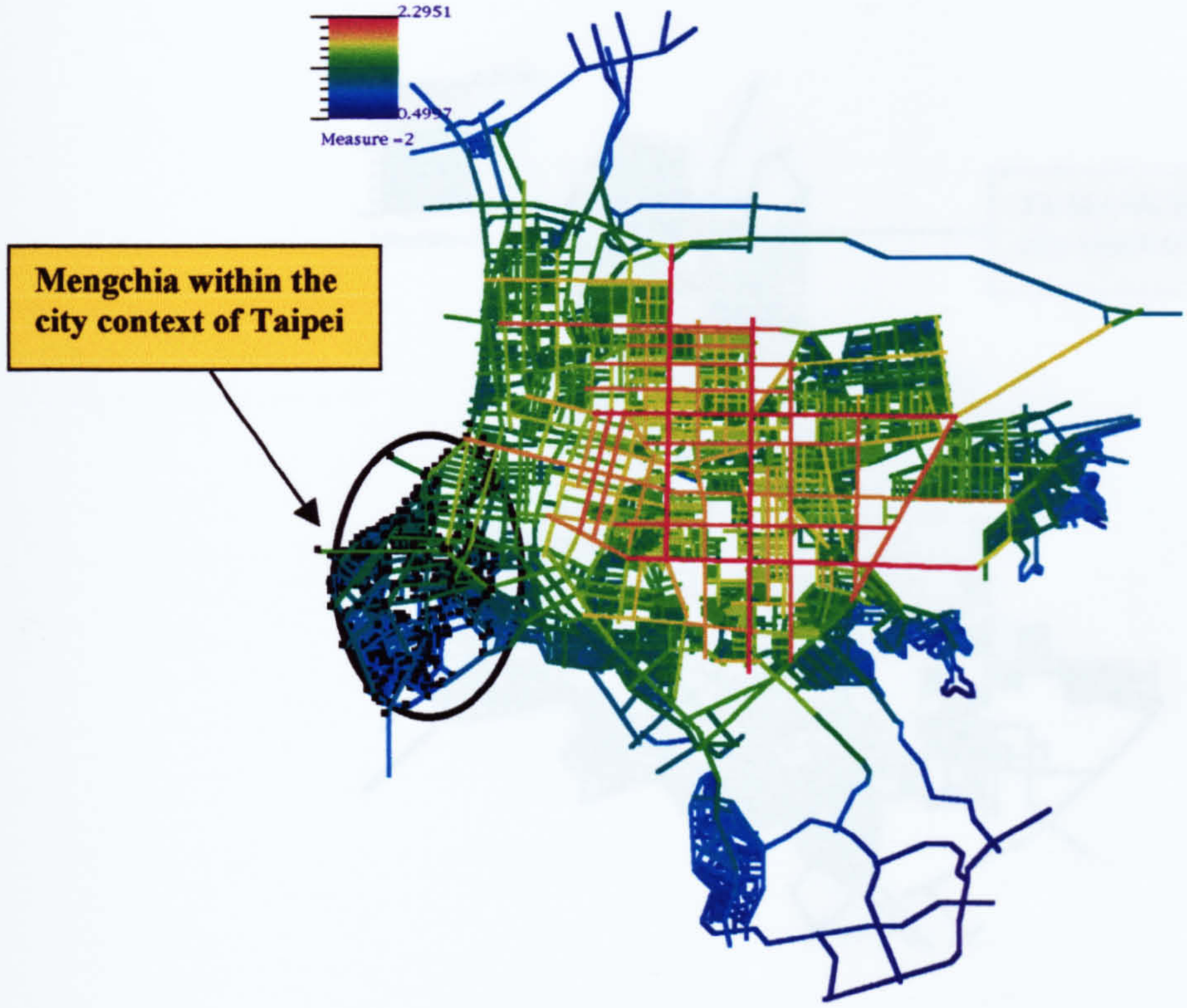


Fig.4.43a: The mean depth of Mengchia (the red dots) within the context of Taipei in 1956

Fig.4.43b: Scattergram of Mengchia (the red dots) within the context of Taipei in 1956



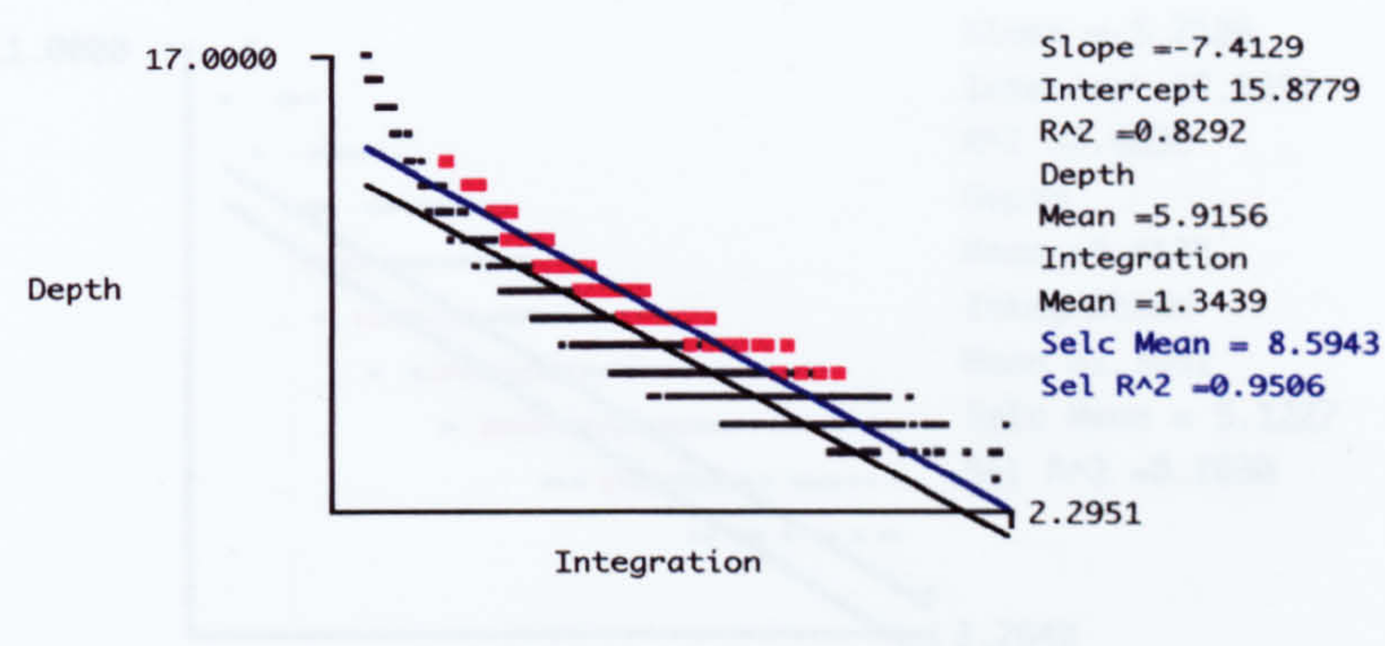


Fig4.44a: The mean depth of Mengchia (the red dots) within the city context of Taipei in 1977

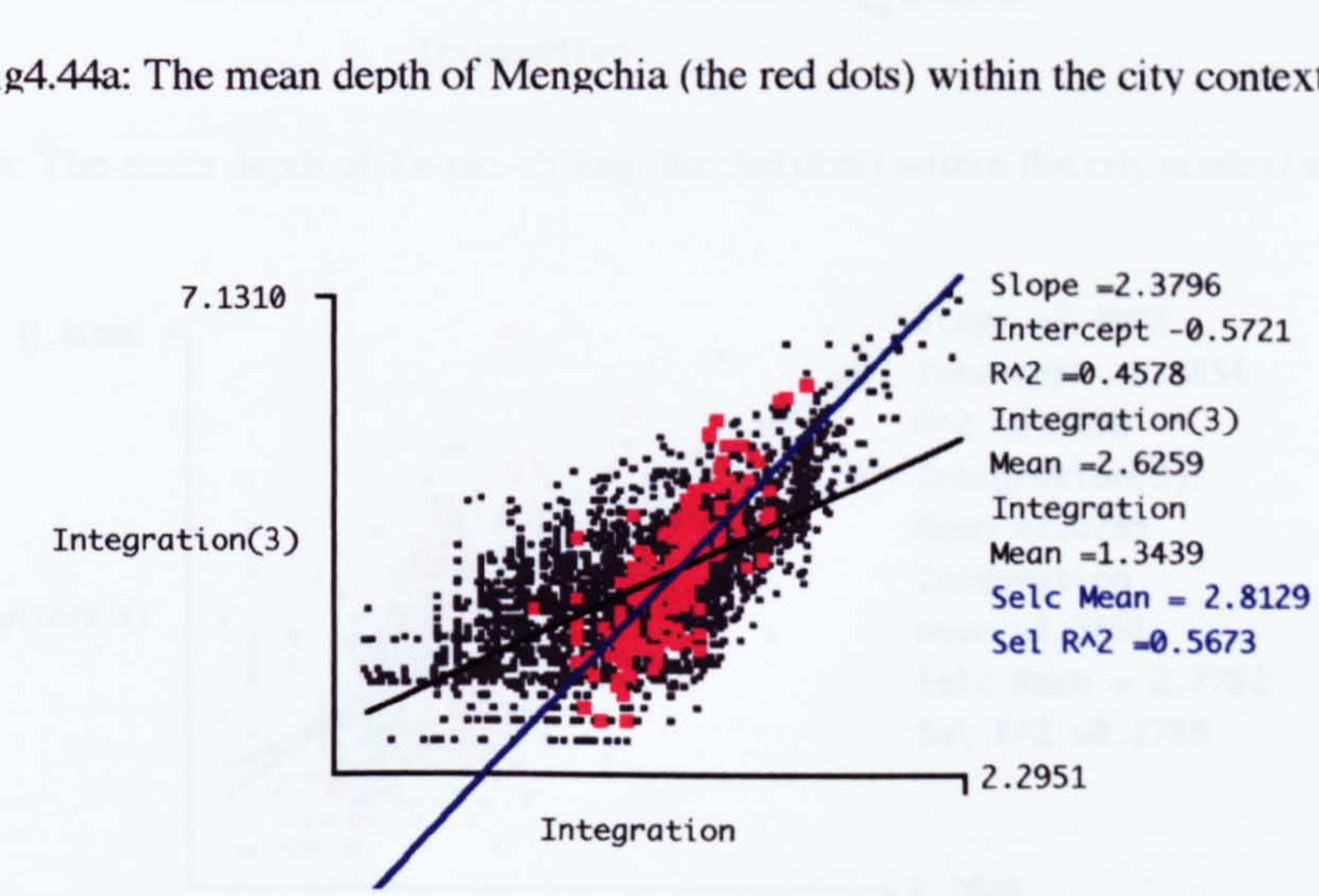


Fig.4.44b: Scattergram of Mengchia (the red dots) within the city context of Taipei in 1977

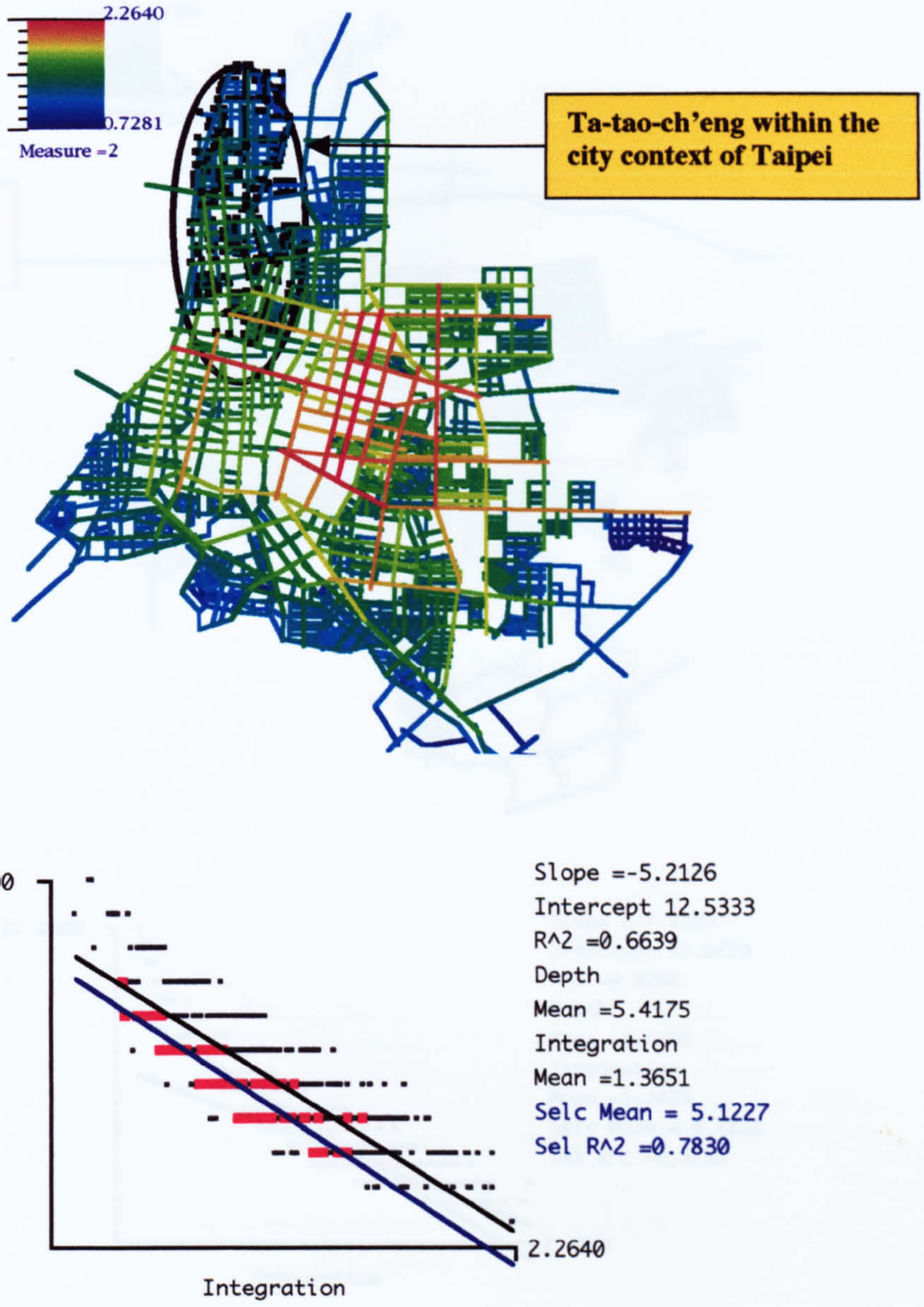


Fig.4.45a: The mean depth of Ta-tao-ch'eng (the red dots) within the city context of Taipei in 1956

Fig.4.45b: Scattergram of Ta-tao-ch'eng (the red dots) within the city context of Taipei in 1956

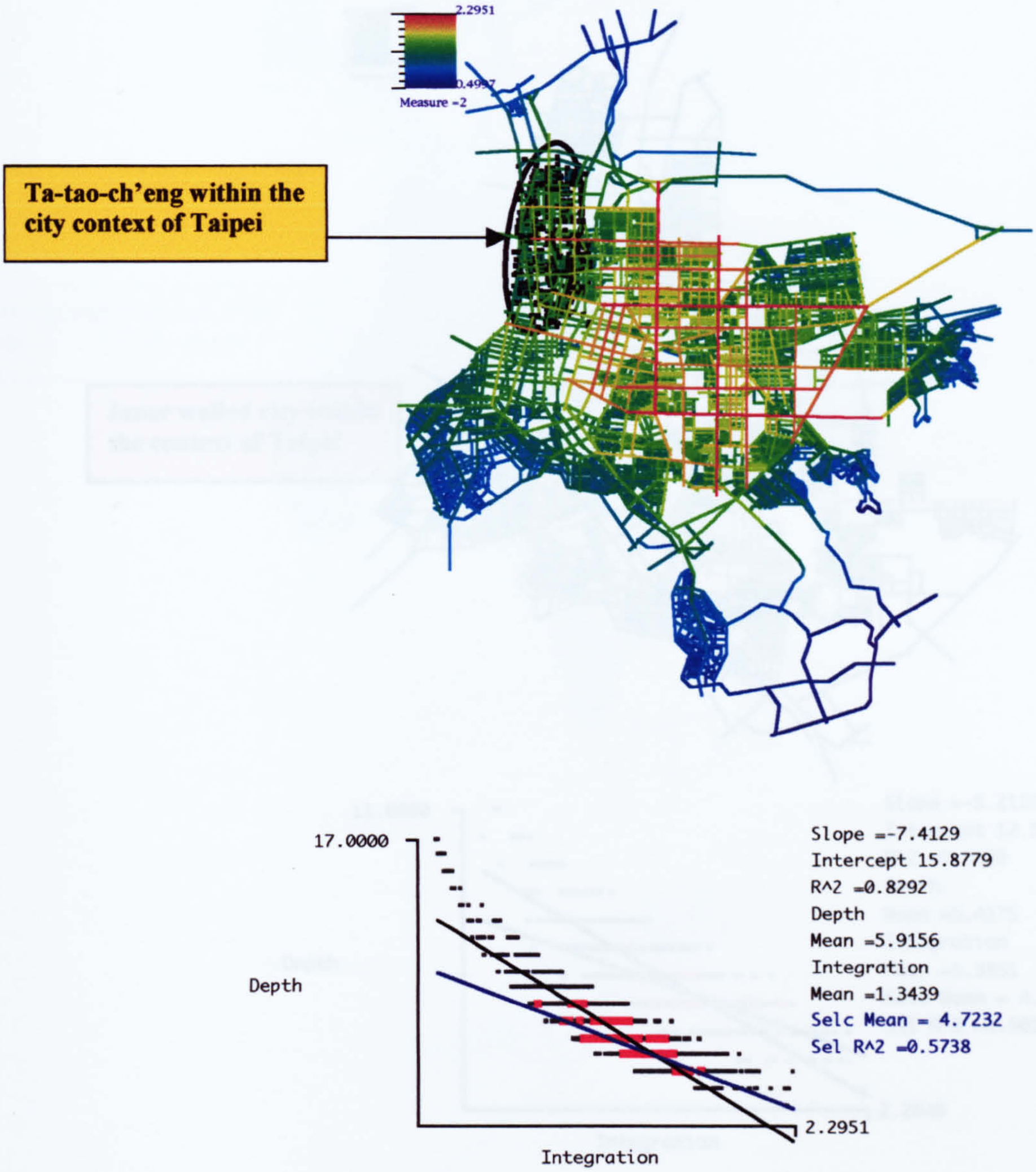
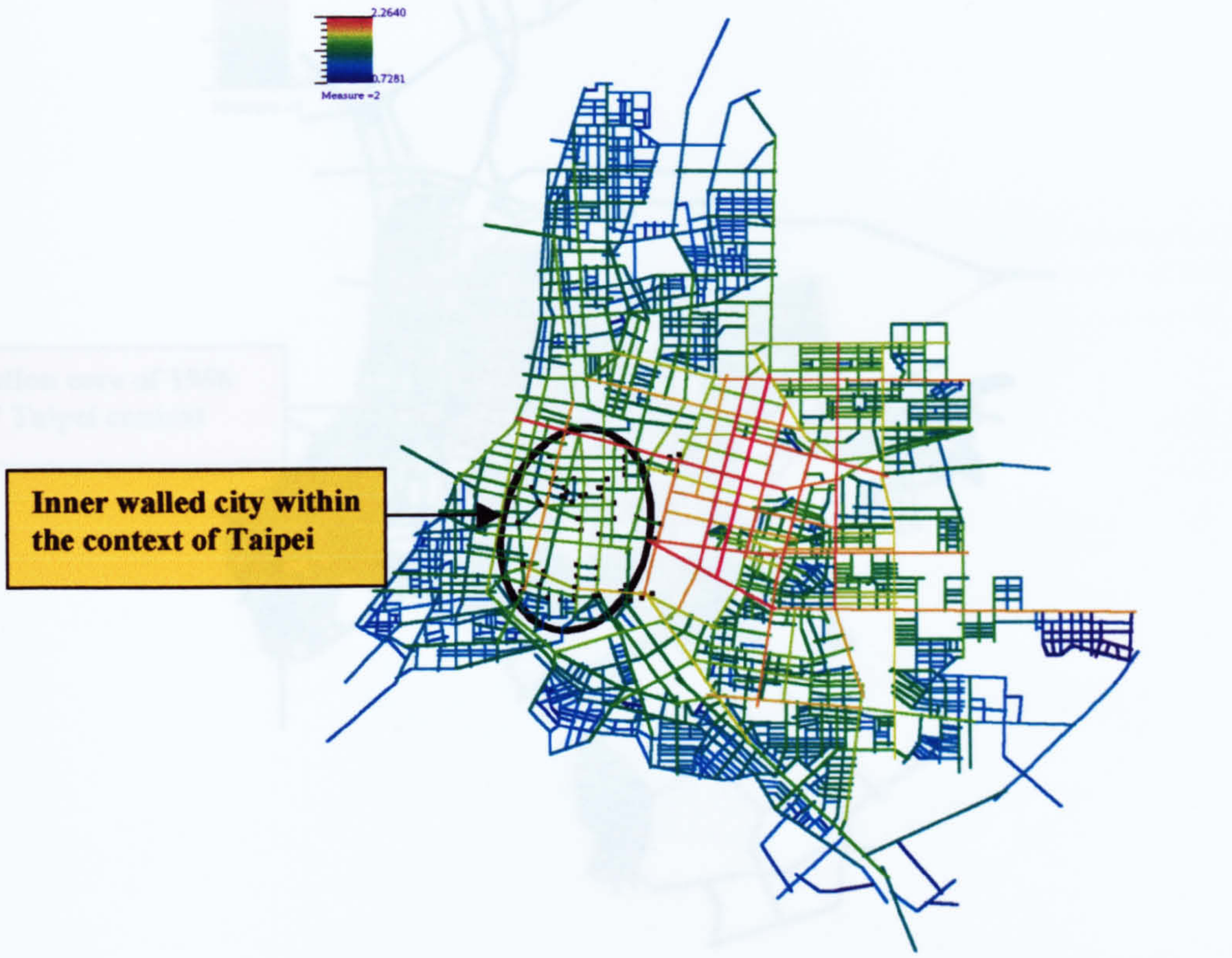


Fig.4.46a: The mean depth of Ta-tao-ch'eng (the red dots) within the city context of Taipei in 1977

Fig.4.46b: Scattergram of Ta-tao-ch'eng (the red dots) within the city context of Taipei in 1977



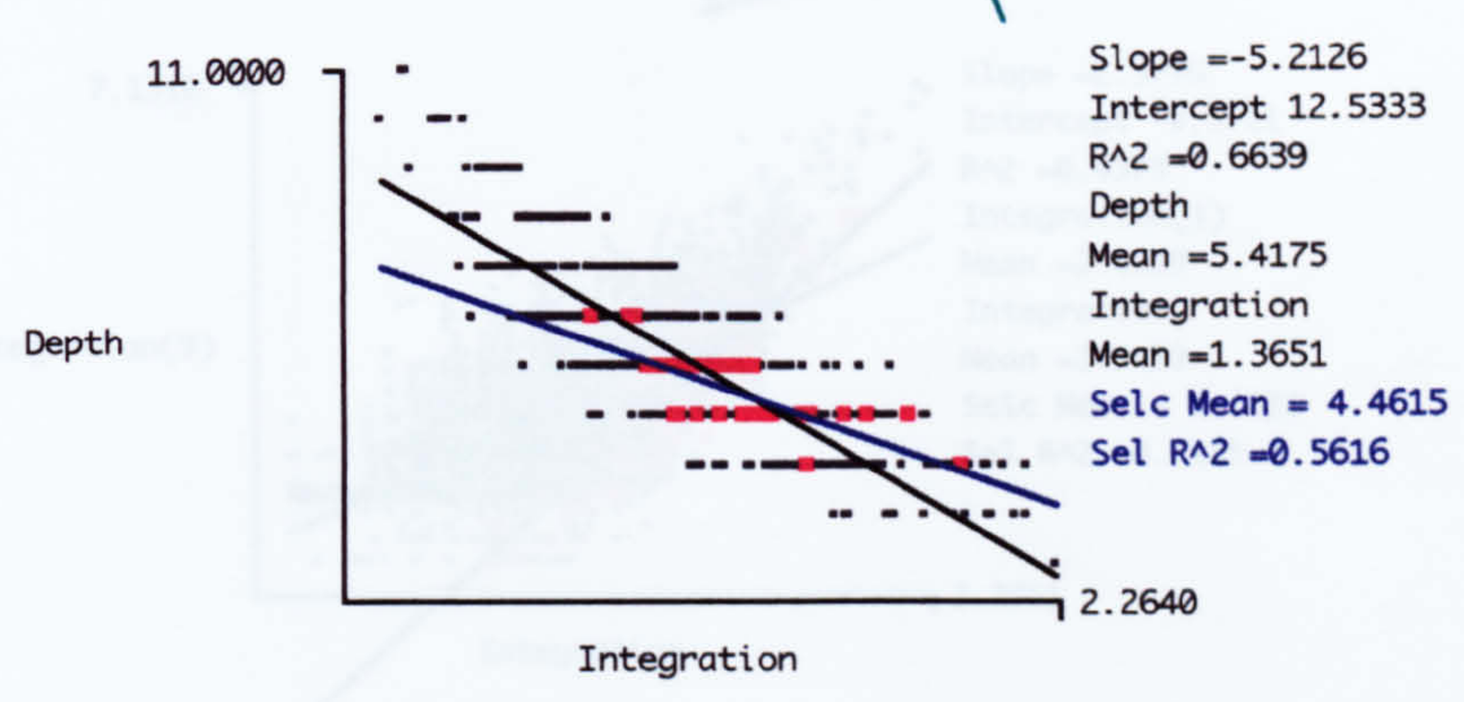


Fig.4.47a: The mean depth of the inner walled city (the red dots) within the context of Taipei in 1956

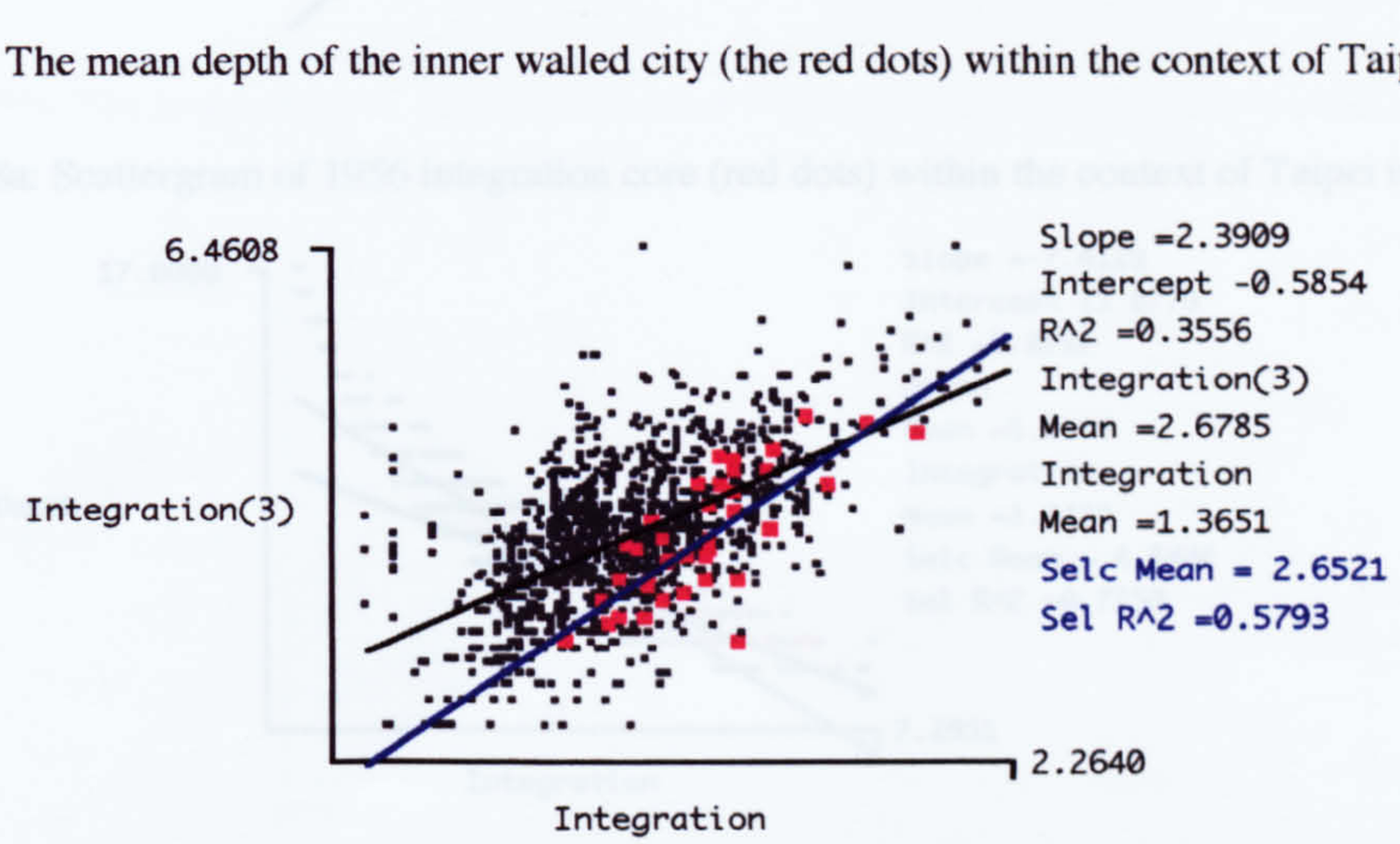


Fig.4.47b: Scattergram of the old inner walled city within the city context of Taipei in 1956

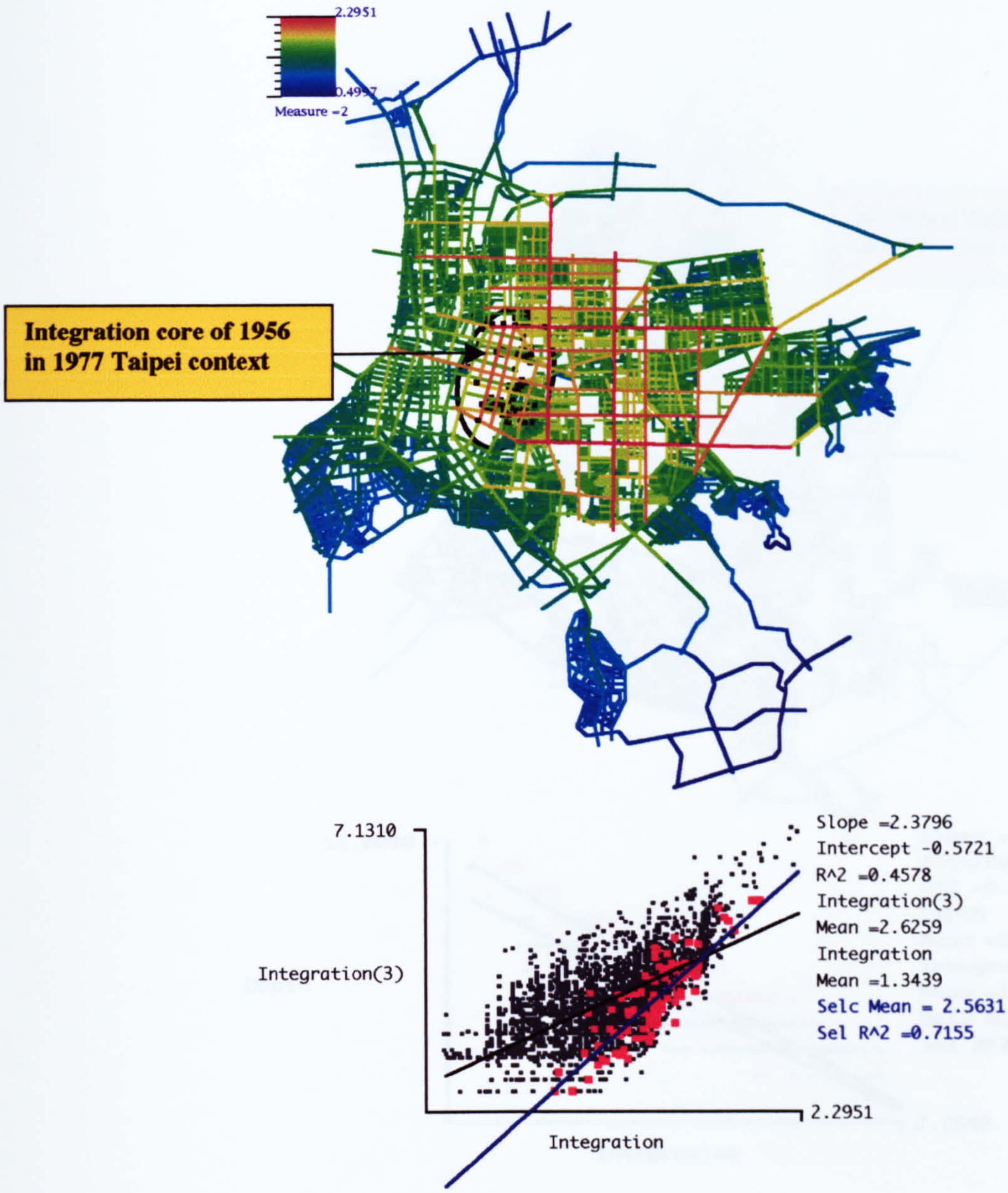


Fig.4.48a: Scattergram of 1956 integration core (red dots) within the context of Taipei in 1977

Fig.4.48b: The mean depth of 1956 integration core (the red dots) in the context of Taipei in 1977

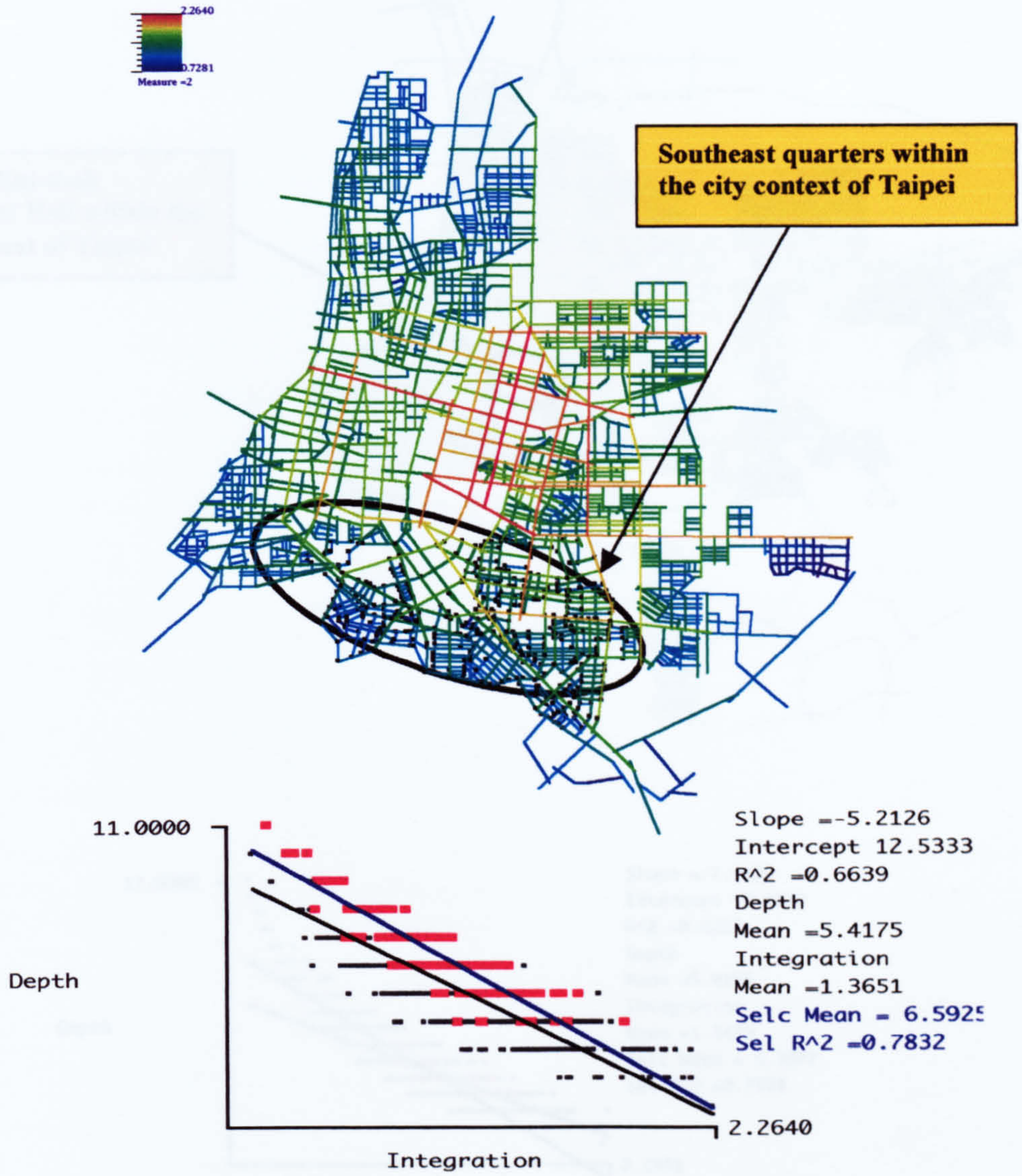
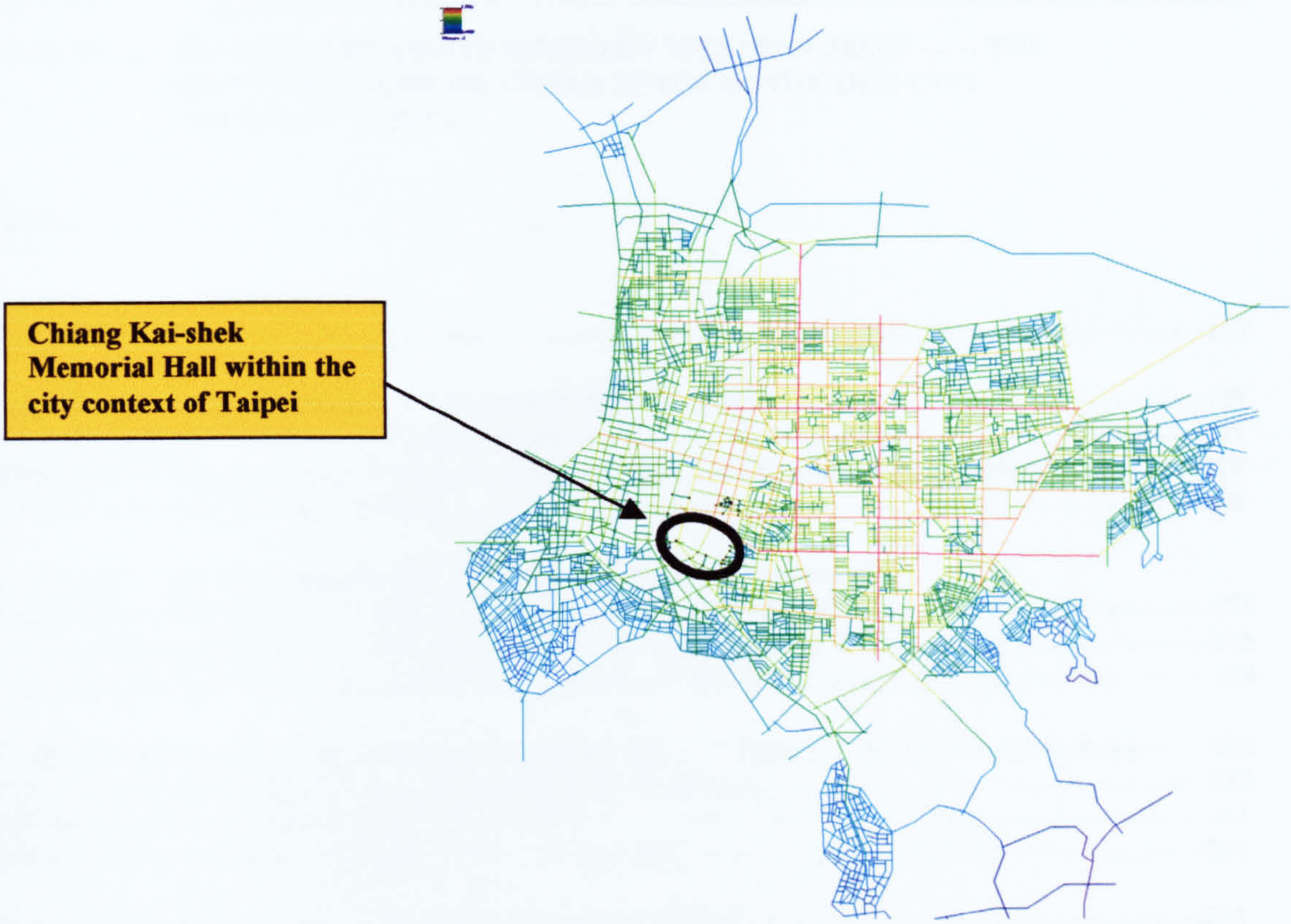


Fig.4.49a: The mean depth of southeast quarters (the red dots) within the city context of Taipei in 1956

Fig.4.49b: Scattergram of southeast quarters (the red dots) within the city context of Taipei in 1956



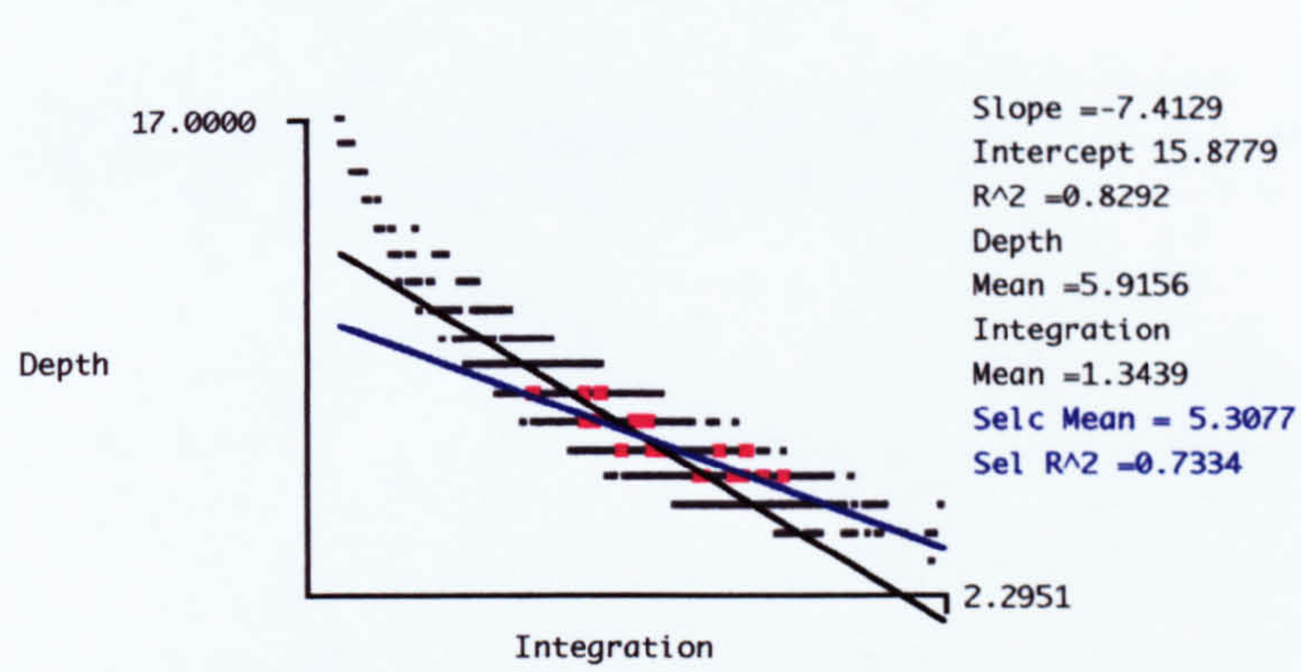


Fig.4.50a: The mean depth of Chiang Kai-shek Memorial Hall (the red dots) within the city context of Taipei in 1977

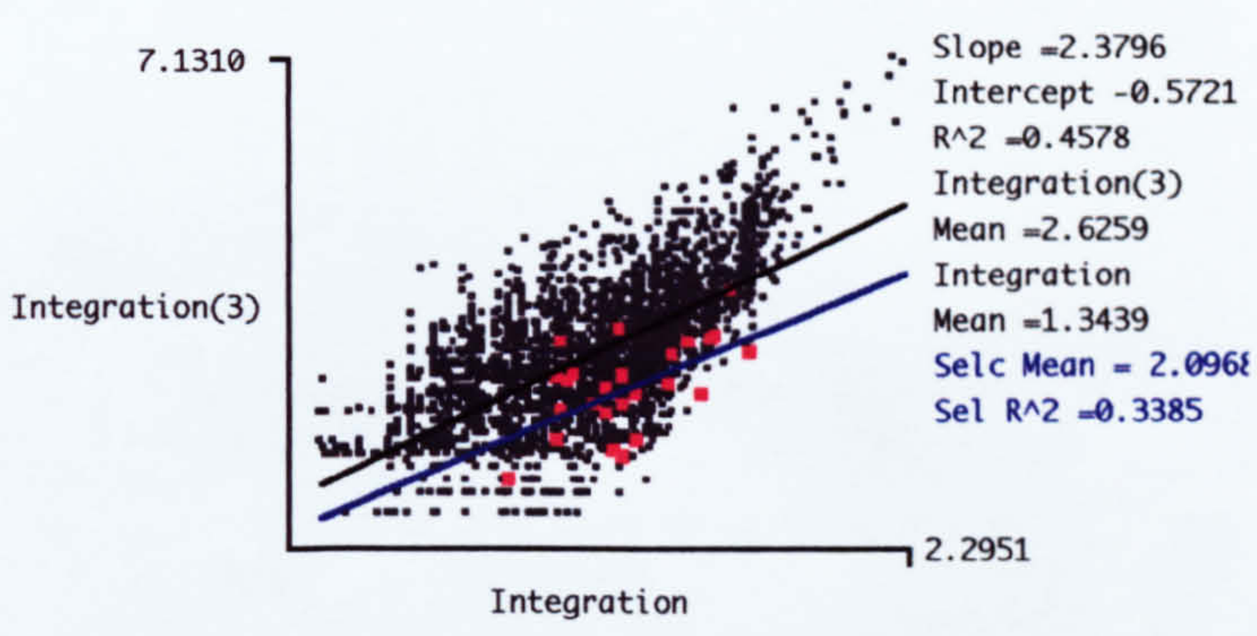


Fig.4.50b: Scattergram of Chiang Kai-shek Memorial Hall (the red dots) within the city context of Taipei in 1977

CHAPTER FIVE: READING THE CONTEMPORARY WESTERN ZONE ----- THE DEEP STRUCTURE OF URBAN SPACE IN THE OLD CITY CENTRE OF TAIPEI

CONTENTS

Chapter 5: Reading the Contemporary Western Zone —— the Deep Structure of Urban Space in the Old City Centre of Taipei

5.1 Prologue

This chapter explores the deep structure of the present situation of the old city centre (Wanhua) in Taipei with an in-depth analysis at both district and urban quarter levels following the experience of spatial change in the urban development of the whole city in history. Wanhua District is located at the Western zone of the city (Fig.5.1). It was the original urban centre of the city known as 'Mengchia' since Ch'ing Dynasty. It is the oldest and earliest development in the Taipei Basin with its rich historical context. The in-depth analysis of this old urban centre is carried out with a twofold purpose. Firstly, it can provide a legitimising framework of the interaction and configuration of the present urban context of the city; and secondly, it attempts to trace the deep structure and genotypes of spatial pattern in local context to indicate how the pattern has maintained its spatial logic and characteristics after the process of transformation.

The in-depth study will be carried out at two levels. The first level investigates Wanhua in the whole city context with a morphological analysis. The second level is the study of the urban quarter (Hsimenting) with micro analysis of the interactions between social activity and urban space. The patterns of social activities in street space are studied to see how these activities are affected by gender roles and occupational uses of urban space. The process of this reexamination is critical to the recognition that spatial transformation not only reflects people's experiences in place, but is also a phenomenon linking the individual's construction of concrete social relationships to ownership, as well as to affection, attachment, human relations, and community of the place.

This chapter is divided into six major sections. It begins with a prologue. The next section describes the background and context of the contemporary Western zone in order to understand its historical setting and social structure. Section three explains the change of spatial form and patterns adapted and evolved in contemporary spatial configurations by a morphological analysis. The analysis deciphers the specific characteristics of urban public spaces in this district in regard to their spatial order and structure and images. Section four examines the present-state of socio-cultural form of space with a micro-study of Hsimenting in

order to see how patterns of interactions are performed and adapted in accordance with spatial change. Section five discusses the deep structure and significance underneath the spatial pattern and the transformation rules of urban space in the contemporary old city centre. The last section discusses the value of traditional space to the spatial identity of the present-day old city centre.

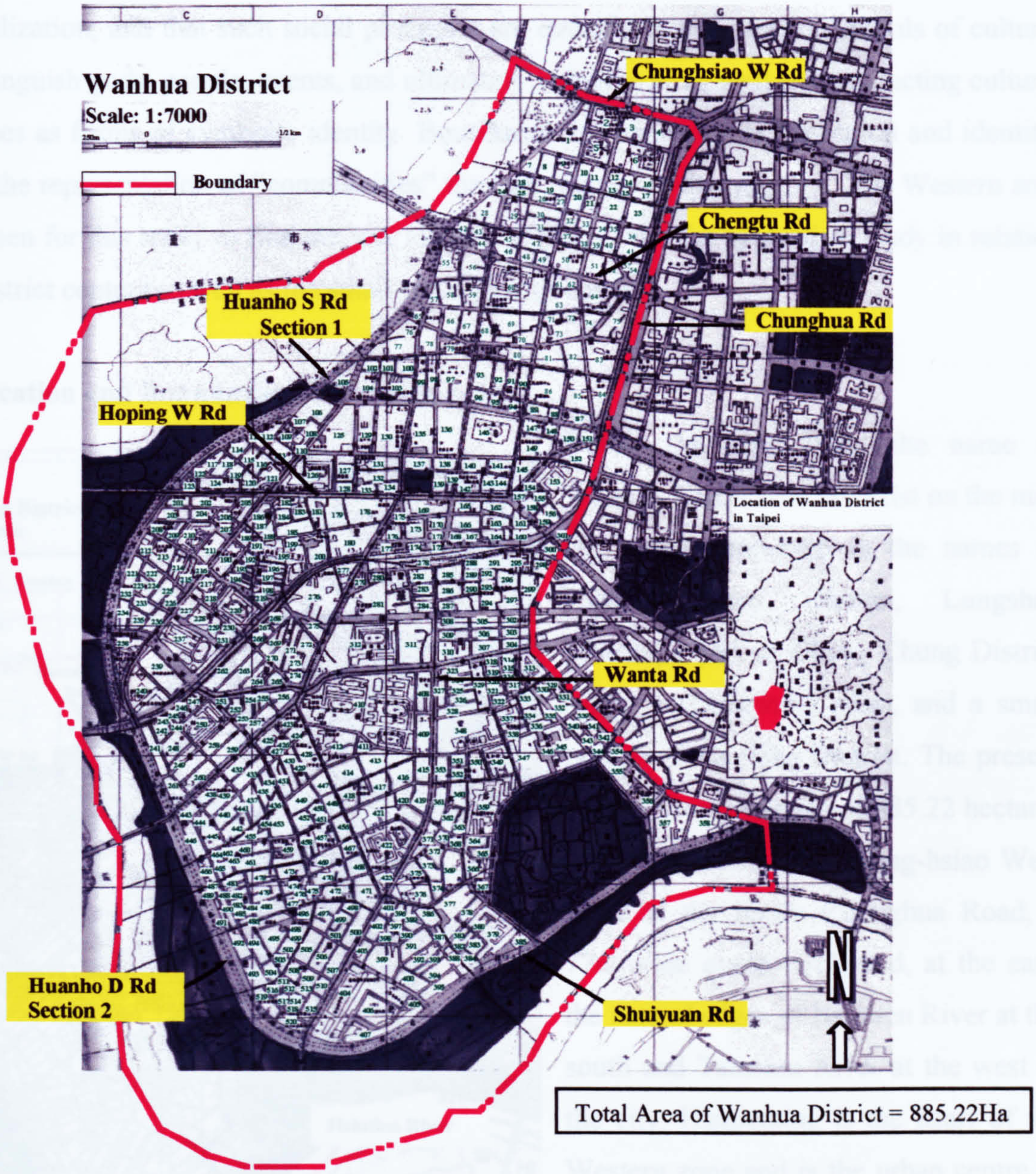
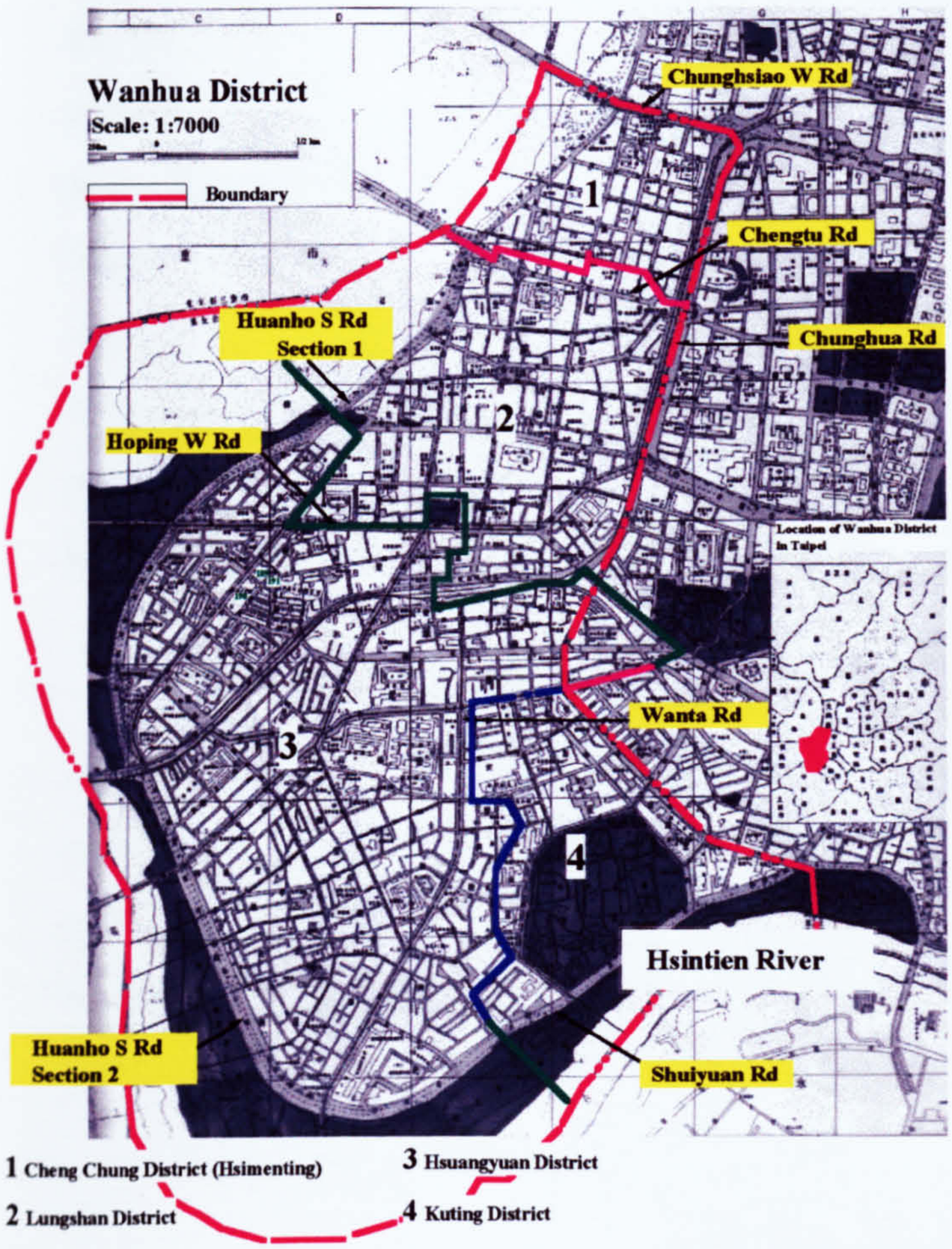


Fig.5.1: The boundaries and location of Wanhua District in Taipei city

5.2 Background and Context of Contemporary Western Zone

Wanhua District is located in the Western zones of the old city. It expanded from the earliest settlement of Mengchia.[65] The recognition of the area has been reflected in that boundaries should not be given or determined but must be made through social processes of territorialization, and that such social processes are embedded with shared symbols of culture, that distinguish gods, people, events, and ultimately individuals; as well as constructing cultural landscapes as forms of symbolic identity. Boundaries are important to the region and identity, and are the representation of "communities" through their everyday practice. The Western area was chosen for this study to find the real identity of place from the syntactical study in relation to the district context as well as the small-scale quarter context.

5.2.1 Location and Boundaries of Western zone



Before the year 1989, the name of Wanhua District did not exist on the map but instead appeared in the names of Hsuang Yuan District, Lungshan District, a part of Cheng Chung District (today's Hsimenting area), and a small portion of Ku Ting District. The present district covers an area of 885.22 hectares and is surrounded by Chung-hsiao West Road at the north; Chunghua Road, a 77m wide grand boulevard, at the east; the natural edges of Hsintien River at the south and Tamshui River at the west of the city. Hsimenting is the heart of the Western zone and is the urban centre of the old district. It is surrounded by Chunghua Road in the east; Chengtu

Fig.5.2: The boundaries of four districts before 1989 in the present Wanhua District

[65] See Chapter four, section 4.3

Road in the south; Huanho South Road in the west, and Chunghsiao West Road in the north of the City (See figure 5.2).

5.2.2 The pattern of urban space structure, land uses and values in the contemporary old centre of Western zone

The old Western zone has high intensity commercial land use zoning. It centres round Taipei Central Railway Station and spreads outward to form a triangular shape of central commercial areas, which dominates the current pattern of land use in this old city centre. Wanhua District is divided by Hoping West Road into two major sectors. Reflecting the zoning map, the area above this road is classified into high intensity commercial uses at class C4 and C3 (FAR= 800% and 400% respectively) while the area below this road is classified into residential uses at class R3 (FAR=225%). However, the zoning plan does not totally reflect the actual occupational uses of the area. In fact, the mixed-use pattern is a common phenomenon in the city, in particular, in most of the residential areas. In this area, the urban structure remains to a large extent unaltered. The shophouse is the typical built form of the old city centre. It maintains the function that the ground floor is often used for commercial activity while the upper floors are basically for residential use. However, some other uses such as retails, KTV, or internet cafes have mixed residential at the upper floors in the present usage of space. Patterns such as shopping, leisure or social gathering, have affected daily life activities and regulate people's use of the surrounding urban public space. The whole pattern eventually changes the spatial character.

The old Western zone has specific contexts of building density, type and height; block pattern, pattern of parcel and landownership, and open space system. It contrasts with the other newly developed areas such as the new eastern zone of the city. The traditional narrow street network is incapable of handling heavy traffic, city decentralization has caused sub-grading of commercial industries, and the land is subdivided into many small parcels. Land ownership has restricted development opportunities throughout the old city centre.

There are three distinctive patterns of quarters in the old Wanhua District in terms of their land uses and block patterns. The first quarter is the area bounded by Chengtu Road at the south and Chunghsiao West Road at the north, namely the Hsimenting quarter, which has a formal grid block pattern with dense commercial uses. The second quarter is the area below Chengtu Road and bounded by Hoping West Road. At the south this area has an informal grid pattern with mixed-commercial and residential uses. The third one is the newest residential area in the district developed during the late 1970s, and is located below Hoping West Road at the north of the quarter and bounded by Tamshui River at the west and Hsintien River at the south respectively. (Fig.5.3)

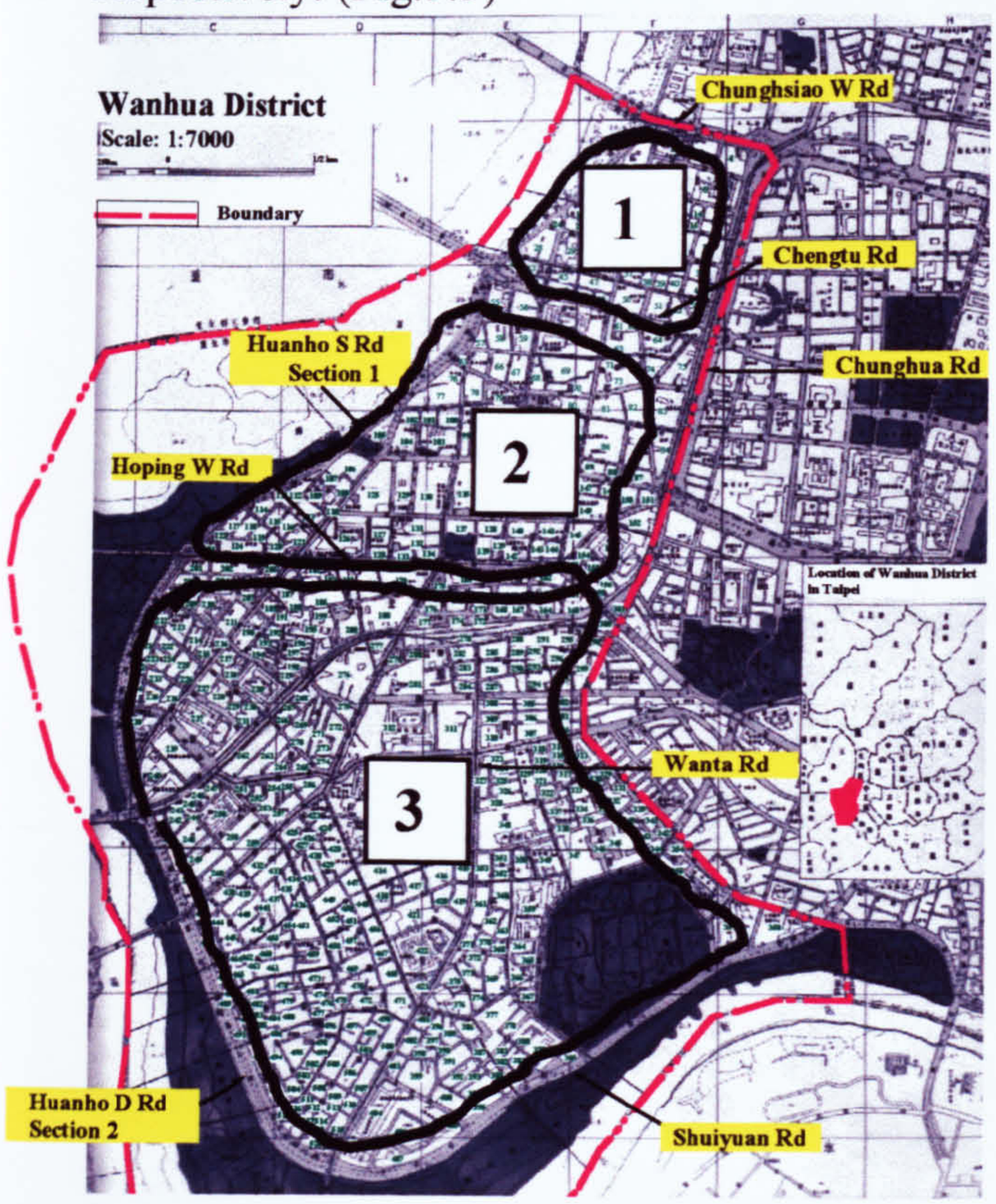


Fig.5.3: Three different patterns of quarters in the old Wanhua District

Fig.5.4: Small land parcels with complicated landownership in the old districts
Source: Department of Land Administration, Taipei Municipal Government, 1992.

In Wanhua District rows of under-4 storey height old shophouses, interspersed by the most recent 5-6 storey converted shophouses and mid-rise buildings of mixed-use developments are the common urban context. There is little opportunity for large urban block pattern development within the already dense development of the old area, which is characterized by small parcel sizes with multiple land ownerships (Fig.5.4). A few small pockets of urban space such as

Fig.5.5 The system of continuous verandah way characterizes the current urban fabric of the old districts.

Fig.5.6: Building facade with a sea of signage forms a more human scale of enclosed street space.

temple squares, or small parks are interwoven with narrow street system, which is commonly seen to inter-articulate with one significant element: the system of continuous verandah or covered passageway that characterizes the current urban fabric of the old districts (Fig.5.5). Facades of shophouses with a sea of signage hung on the external walls forming a humble scale of enclosed street space intertwined with the existing urban fabric and giving a special spatial image to the old areas (Fig.5.6). Reflecting the sub-culture of the area it is the most important base for the attractiveness and liveliness of the street space.

A further look at urban land values, illustrates an interesting trend of urban land values varying with the intensity of activities in relation to the types and uses of urban spaces, and also the direction of growth within the city. A comparison of land value index between the old urban area and the new urban area of Taipei from 1970 to 1986, as in Table 5.1, shows a bigger gap from 1978 onwards, and the values of new urban area are almost double those of the old urban area. A huge gap in values between Wanhua district (old urban area) and Dian district (new urban area) not only indicates the recent urban growth pattern of the city, but also reflects a principle that urban land values vary inversely with distance from major streets. Land values are greatest along the major business streets, but decline rapidly with distance at right angles. (See Table 5.2.) For example, the parcels of land along the streets in Wanhua District had a range of values from the highest at NT$600,000 (equivalent to £12,000) per square metre to the lowest at

NT$90,400 (equivalent to £1,808) per square metre. These values are higher than the land values behind the streets which are only NT$216,000 (£4,320) per square metre to the lowest at NT$3,600 (£72) per square metre.[66] The difference between these land values reflects two phenomena. First, it indicates the decline of the old urban centre because its small land parcels with narrow street pattern does not encourage further urban redevelopment. Second, this area embraces a major social group, namely, a relatively low-income group.

Table 5.1: Land Price Index of New and Old Urban Areas and Average over whole city

District / Year	New urban Area	Old urban Area	Average over whole city (Taipei)
1970	100	100	100
1971	100.37	115.57	111.25
1972	105.88	116.99	113.73
1973	138.23	151.62	147.70
1974	277.40	280.74	279.77
1975	296.81	395.08	366.28
1976	340.27	409.79	389.42
1977	440.50	424.77	429.38
1978	640.43	443.58	490.72
1979	839.01	599.32	669.56
1980	1312.52	706.32	884.15
1981	1815.11	917.72	1189.32
1982	2001.92	967.97	1268.11
1983	2018.77	1025.68	1316.71
1984	2059.88	1035.96	1336.02
1985	2068.98	1039.61	1341.17
1986	2120.45	1092.73	1393.91

Source: after Lin, Yuan-hing, "A Study of Methods for Real Estate Price Index Construction", *Journal of National Cheng Chi University*, Vol.59, 1988: 195-234 (In Chinese).

[66] Using the current exchange rate £1=NT$50.00

Table 5.2: A comparison of urban land values between the old and the new districts

Land value (NT$/sq.m.)	Land price of street		Land price behind the street	
	Highest	Lowest	Highest	Lowest
Taipei city	720,000	28,000	569,500	1,500
Wanhua District (old Western area)	600,000	90,400	216,000	3,600
Dian District (New Eastern area)	710,000	116,000	440,000	4,500

Source: *The Statistical Abstract Yearbook of Taipei*, Bureau of Accounting and Statistics, Taipei City, 1997.

5.2.3 Social Structure of Western Zone

It is known that social structure may produce subcultural variation in the use of urban space for self-presentation. The social structure not only signifies that women and men perceive urban space with different meanings, but also allows them to reinterpret their uses of urban space to validate their personalized identities. The demographics of residential quarters in this district, in particular located in those early settlements, show a close-bound characteristic in relation to the distribution of ethnic groups. The figures in Table 5.3 indicate that the number of native resident (Taiwanese) in Wanhua is about 4 to 5 times more than non-native residents[67], and the total population of Wanhua has decreased since 1971 (Fig.5.8). The change and the composition of the population reflects the old area's character in terms of its spatial preference and usage by local people. People enjoying daily life activities in urban public space such as temple's square and street is a common social behaviour pattern which has a long history in this old area. For example, Lung Shan Temple square is a favourite place for social gathering of the older native group. It was the political or social centre of the old settlement in the past. It still retains its social function and pattern of local neighbourhood. Such social function maintains a very strong relationship among people within the same ethnic group of this local area. It is a distinctive social space for people to have either political or social events. Similarly, the use of street space by this social-group has demarcated a symbolic boundary of spatial domains that confines with a close-bound spatial identity to the area (Figure 5.7). The social context of this old urban area has affected the usage of urban space and characterizes the identity and spatial culture of this old area.

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[67] This term normally refers to most of the arrivals, regarded as mainlanders, from the mainland in the late 1940s. In Mandarin, these people are called *waishenjen*, which means "people from outside provinces".

Fig.5.7 Common street activity in the old district --- a gathering place of old native group in Kangting Road

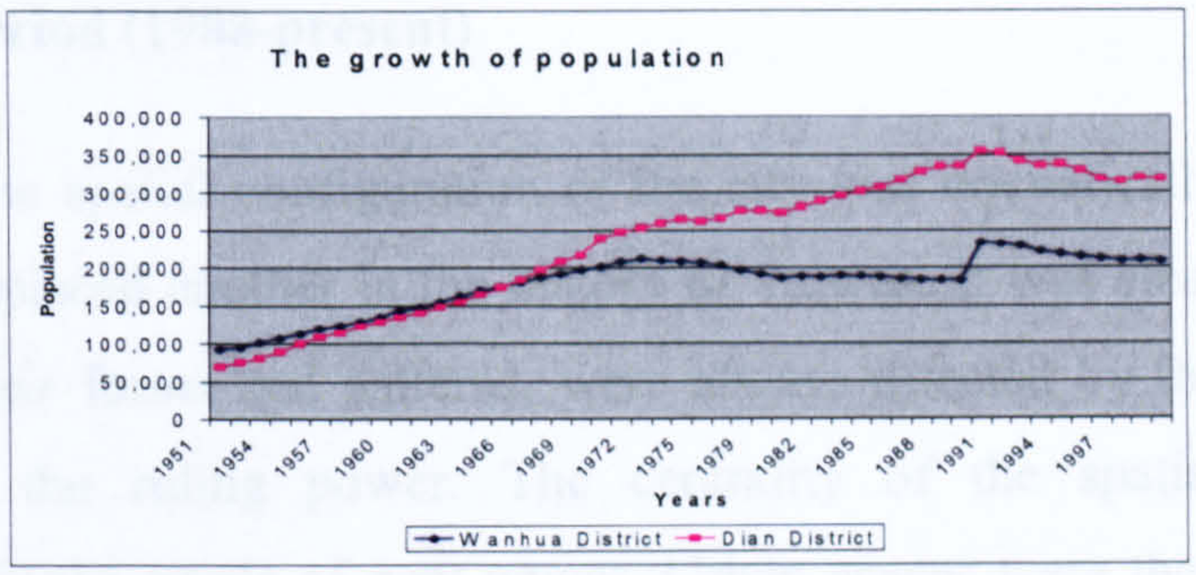

Fig.5.8 A comparison of the growth of population between Wanhua and Dian from 1951 to 1999

Table5.3: The composition of Native resident and Non-native resident in Wanhua District

Year / Place	1955	1960	1965	1970	1975	1980	1984	1990
Native resident	90,177	116,800	141,431	164,915	172,283	156,960	159,401	184,478
Non-native resident	22,843	27,584	34,076	35,813	33,820	30,247	29,449	48,456

Source: Taipei Statistic Abstract, Taipei City Government

Table 5.4: The growth of population in each year

Years	**Wanhua Population**	**Dian population**	*Years*	**Wanhua Population**	**Dian Population**
1951	92,776	69,826	1975	206,103	261,630
1952	94,950	75,204	1976	202,859	265,256
1953	101,425	81,137	1978	196,268	275,377
1954	106,962	89,084	1979	191,395	275,649
1955	113,020	99,519	1980	186,207	272,215
1956	120,208	108,445	1981	188,143	280,559
1957	124,064	114,555	1982	187,612	288,039
1958	128,560	123,132	1983	189,439	294,851
1959	135,400	129,165	1984	188,850	300,718
1960	144,384	135,152	1985	187,647	307,239
1961	148,082	141,094	1986	185,527	316,334
1962	154,622	148,394	1987	183,925	327,896
1963	162,669	155,322	1988	183,485	334,446
1964	169,944	164,879	1989	183,102	335,058
1965	175,507	173,935	1990	232,934	354,704
1966	180,503	183,876	1991	230,801	352,107
1967	187,753	196,026	1992	228,384	341,765
1968	191,829	207,515	1993	220,896	335,993
1969	196,780	215,906	1994	217,632	337,309
1970	200,728	238,798	1995	213,983	329,516
1971	207,412	247,382	1996	211,091	317,201
1972	210,894	252,777	1997	208,464	314,217
1973	208,948	259,258	1998	209,780	319,003
1974	207,577	264,515	1999	207,943	317,110

Source: *The Statistical Abstract Yearbook of Taipei*, Bureau of Accounting and Statistics, Taipei City. Note: before 1990, the populations were the sum of Shuangyuan and Lungshan Districts. These two administrative districts are included in the present Wanhua District.

5.3 The Change in Spatial Configuration: The Spatial Representation of the Contemporary Western Zone in the Post-colonial Period (1988-present)

The previous chapter revealed that the spatial configuration of the city was dramatically changed every time one political entity replaced another in the history of Taiwan. It was clear that the spatial constructs, in terms of their forms and patterns, were always directed by the ideological and cultural preference of the ruling power. The centrality of the spatial configuration shifted three times to satisfy the needs of new power. Urban spaces were then adapted and transformed in accordance with social structure, cultural life activities, and in particular, the spatial practice of control. Then what is the spatial representation of the contemporary old Western zone in the post-colonial period? The analysis in the following section would explain the formation of a new order of spatial configuration and specific spatial characteristics of urban space in the present-day old urban centre of the city. The revelation from the spatial analysis would also indicate how the depth change within the urban centre has significantly altered the definition, meaning and function of individual spaces and their relationship within the whole.

5.3.1 A Morphological Analysis of Present-day Western Zone in the Whole City Context

From the historical spatial structure point of view, the old urban centre of Taipei has shifted its position in accordance with the restructuring of social structure and the changing life activity patterns in the process of transformation. Wanhua District (also known as Mengchia in the old time) was once the urban centre of Taipei. The heyday of this old urban area has left behind a glorious history of collective memories, with historical vestiges such as streets, monuments and buildings, or cultural events such as '*chiao*' (community rite), and '*suu-tien*' (city ceremonial rite). However, the old urban centre has been transformed in terms of its socio-spatial aspect and current spatial position in relation to the whole structure of the city. The redevelopment of the old Western zone has changed the urban landscape of the city. Major projects of redevelopment in recent years are summarized in Table 5.6. Besides, the expansion of the city to the east has reconfigured the spatial structure of this old area, and transforms the character and cultural context of the old centre. A sense of centrality is lost to this old centre although it is still characterized by its distinguished historic urban fabric. A deformed grid is

interwoven with narrow streets mingled with numerous pocket squares. However, these changes have led to two questions. First, how does the spatial change affect people's use of urban space in the old area today? Second, how does the present Western spatial configuration differ from the past?

Table 5.5: Chronology of major redevelopment projects in the old Western zone

Redevelopment Projects in Western Zone	Date	Note
1. Hsimen (Westgate) Market Renewal Project	03.05.2001 demolished	Including the refurbishment of Red House theatre and the cruciform market place.
2. Construction of 40m width Meng-chia Boulevard	Completed on 06.2001	
3. Taipei Movie Theme Park	08.2001	Locate at Hsimenting area
4. Wanhua No.12 Park	Complete on 03.2004	Situated in front of Lungshan Temple
5. Public environment of Wanhua New Station Special Area Redevelopment	12.2001	
6. Redevelopment of Dailei Street Special Area	12.2001	Clothes and fashion street
7. Redevelopment of Youth Park Underground Parking	08.2001	
8. Redevelopment of Huan-nan (Circular South) Market	12.2006	
9.Capital Core District Preservation Plan	Planning and competition stage	Capital Plaza Reconstruction Plan and Public Access
10. Taipei Terminal Station Underground Mall	05.2004	Area=16,350 square metre, including a shopping mall at B1 with 53 units and 188 parking spaces

Source: *Chinatimes*, 04/17/2001, p.17 and 08/08/2000; Bureau of Urban Development, Taipei City Government

The global integrated axial analysis of the whole city in the previous section reveals that the change of spatial depth caused a change in the historic spatial character and structure which had given the area a sense of place in the old days. A review of the correlation of Wanhua District in the context of whole city can explain the spatial intrinsic configuration of the old area in terms of its 'intelligibility' and 'functionality'. These two properties are the key "generic functions" of spatial complexes which, according to Hillier (1996:284-5), formulate the key structures which restrict the field of combination and give rise to the architectural form. In so doing, the study of configurational properties, such as global and local integration, can reflect the relationship of spaces in the old Wanhua area to many others in the city context.

Consider the relation between the city of Taipei and Wanhua as a whole. Figure 5.16b-1 is a close up of the axial map of Wanhua District within the City of Taipei in its present context. Fig.5.16b-4 is a scattergram plotting each line (in the Taipei axial map as a whole) as a point located according to its degree of local (radius-3) integration on the vertical axis and its degree

of global (radius-n) integration on the horizontal axis. The red dots are the lines which make up the area of Wanhua District. They form a good linear scatter about their own (blue) regression line, and across the main regression line at a steeper angle. The steeper slope across the regression line means that the most integrated lines within the city, which are the lines from the centre towards to Wanhua area, are more globally than locally integrated. Their local integration is less intensified for their degree of global integration as the coefficient of Wanhua area (R^2=0.3086) is less than the whole in the axial map (R^2=0.3579). However, the scatter shows that the relation of part and whole of the city is made up, at least in part, of the relation between local and global integration. In this context, Wanhua area has its heart linked to the super-grid lines of the city which is connected by strong integrators. In result, an edge-to-centre structure is formed in all directions, and the less-integrated local areas are formed at the peripheral regions of the structure. People seem to have an experience of movement at a great depth from this local area to the most integrated urban center, which is the dynamic carrier of the whole spatial structure. The scatter in Figure 5.16b-2 shows a negative tendency towards a correlation between the depth values and global integration with more red dots leaning to the left of the scatter.

A further look at the values of intelligibility and mean depth of Wanhua local area as compared with the city in Table 5.6, indicates that Wanhua itself has a higher intelligibility context, which reveals a higher 'integration interface' within its internal spatial structure though the area is segregated with less integration in the reading of the whole context. This can be explained by the strong internal structuralized spatial culture in this old district. Seemingly, the changes in spatial structure of the city have caused the change of axial depth but the value of mean depth shows that Wanhua is relatively more accessible within itself than the local area of the city. The deepest space of Wanhua itself is 6 steps as against the 8 steps in the whole city, from the measures of axial lines. This implies that spatial depth from this old urban area has a negative relationship with the level of movement from the city, as spatial depth is measured as the number of changes in direction from one space to other spaces. In this sense, it means that the movement activity is more favourable to local residents rather than strangers in this old district.

The change of spatial configuration of Wanhua District can be revealed from the analyses of its syntactic and numerical properties, which are based on the measurements of convexity and axiality which not only show the distinctive characteristics of the old district, but also allow us to understand the sociospatial genotype[68] underlying the spatial pattern of Wanhua district beyond our normative experience. The local integration map (Fig.5.9b) shows clearly that the different domains of the old area are connected by two most integrated lines, i.e., the horizontal Hoping West Road and the vertical Kangting Road and Wanta Road. These two integrated lines connect to some prominent traditional urban space such as the market street Snake Alley, the temple space with ante-square like Lungshan Temple and Ch'ing-suu cho-shi Temple, or a transportation centre such as the Wanhua Train Station. They were scattered within the old quarters of Wanhua and were the magnets of the old centre which once served the local and other areas of the city. They could regulate most of the pedestrian activities within their local domains as well as at the city level. However, their roles are diminished at the centre of the city when its centrality is shifted to the new urban area at the east. These urban spaces are no longer a spatially integrated core.

	(1) Wanhua	**(2) 1998 Taipei city**	**Mean values (1+2)**	**Notes**
Integration: Note: smaller RRA values indicate greater integration.	RA1 Mean=2.1093 RA3 Mean=1.0873	RA1 Mean=0.9386 RA3 Mean=2.4187	RA1 Mean=1.5240 RA3 Mean=1.7530	RA1 is the value of global integration which counts the lines next to each line in every direction. RA3 is the value of local integration with radius-3, which means the integration is calculated only up to three lines away from each line in every direction.
Intelligibility: it is the relationship of connectivity and integration in urban areas, i.e.: R^2, ($0<x<1$)	$R1^2$=0.2107 $R3^2$=0.7110	$R1^2$=0.1362 $R3^2$=0.6165	$R1^2$=0.1735 $R3^2$=0.6638	Wanhua area has a higher intelligibility than the whole of Taipei.
The relationship of local integration and global integration in urban areas, i.e.:R^2,R3/R1	0.4213	0.3550	0.3882	The local effect is stronger in the city than the district itself at the level of Rn/R1.
Mean depth	6.1164	8.1621	7.1393	The mean depth shows that each line in the system has a certain minimum average line 'depth' from all other lines, which is not necessarily a function of distance.[69]

Table 5.6: Characteristic measures for the morphology of Wanhua District within the context of Taipei in 1998

Note: The measurements of syntactic properties are based on the base map of Taipei and are taken from the *Statistical Abstract of Yearbook of Taipei,* 1998. See other source from the website: www.tala.taipei.gov.tw

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[68] According to Hillier's concept on genotype (1984), it is understood as a 'description centre', which contains a local embodiment of genetic instructions, and in particular, guarantees the continuity of the class of organisms in time and their similarity in space.

[69] See Hillier, 1996:160.

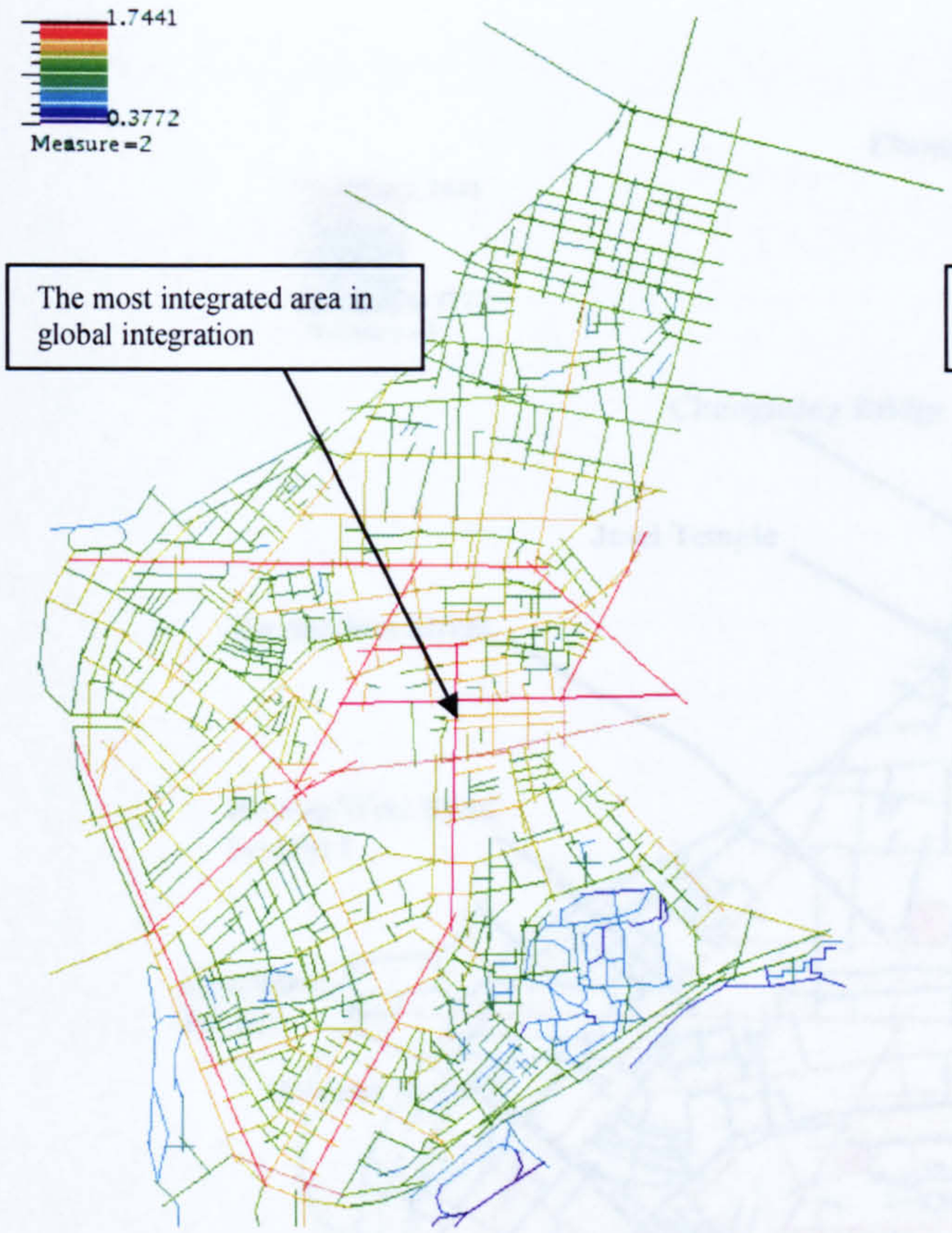


Fig.5.9a: The axial analysis of Global Integration (RAn) of Wanhua District

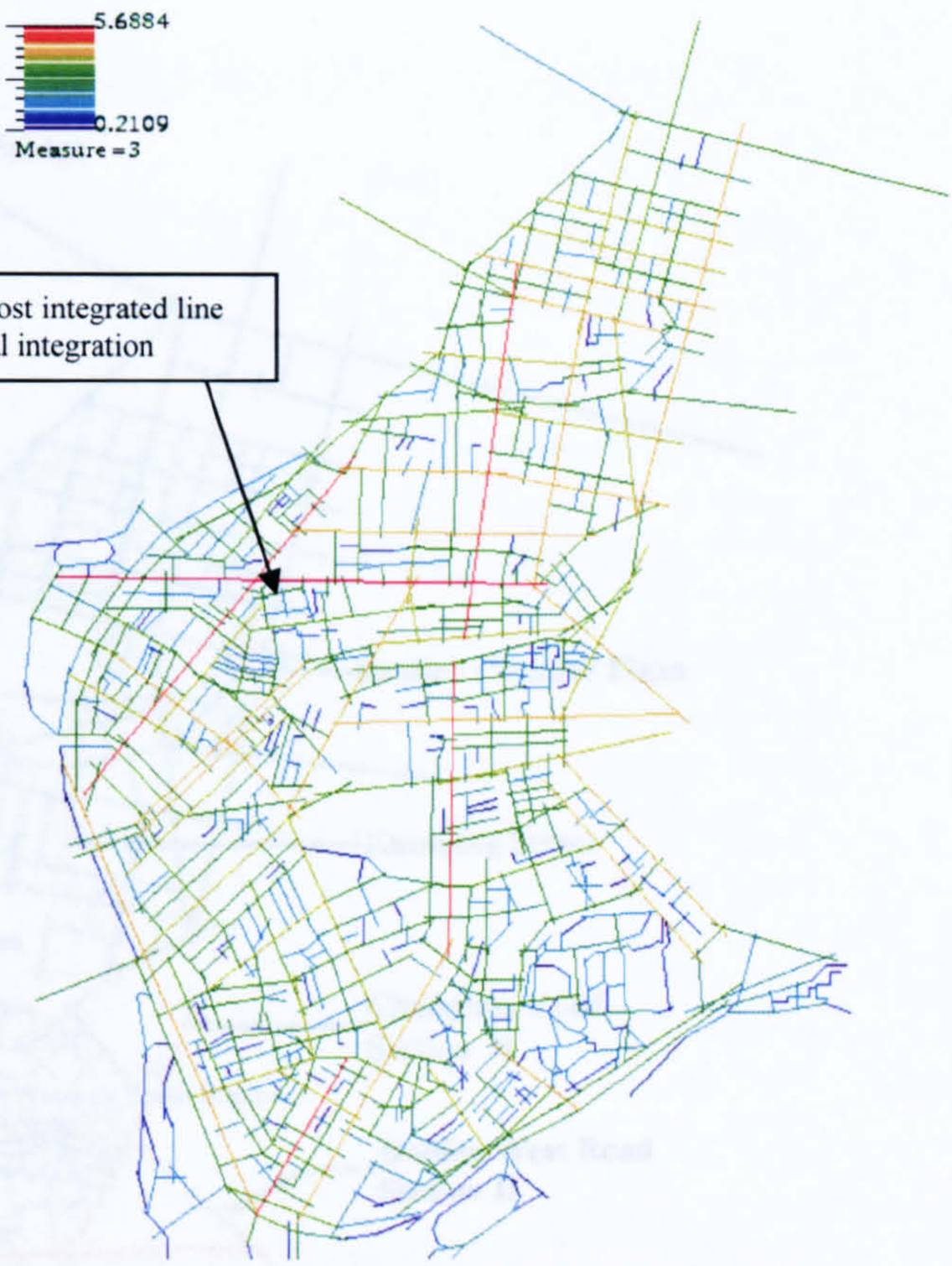


Fig.5.9b: The axial analysis of Local Integration (RA3) of Wanhua District

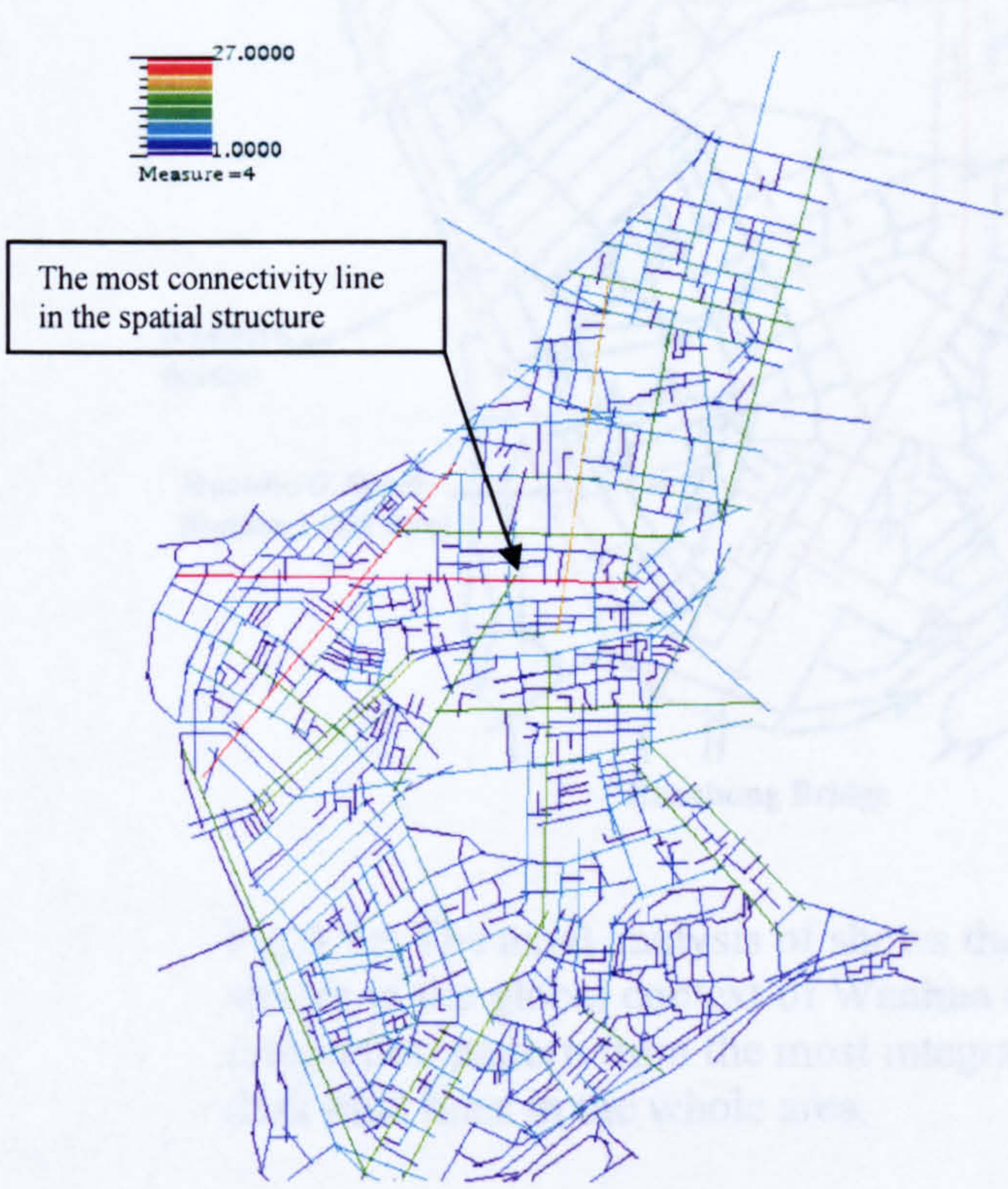


Fig.5.9c: The axial analysis of connectivity lines (RA4) of Wanhua

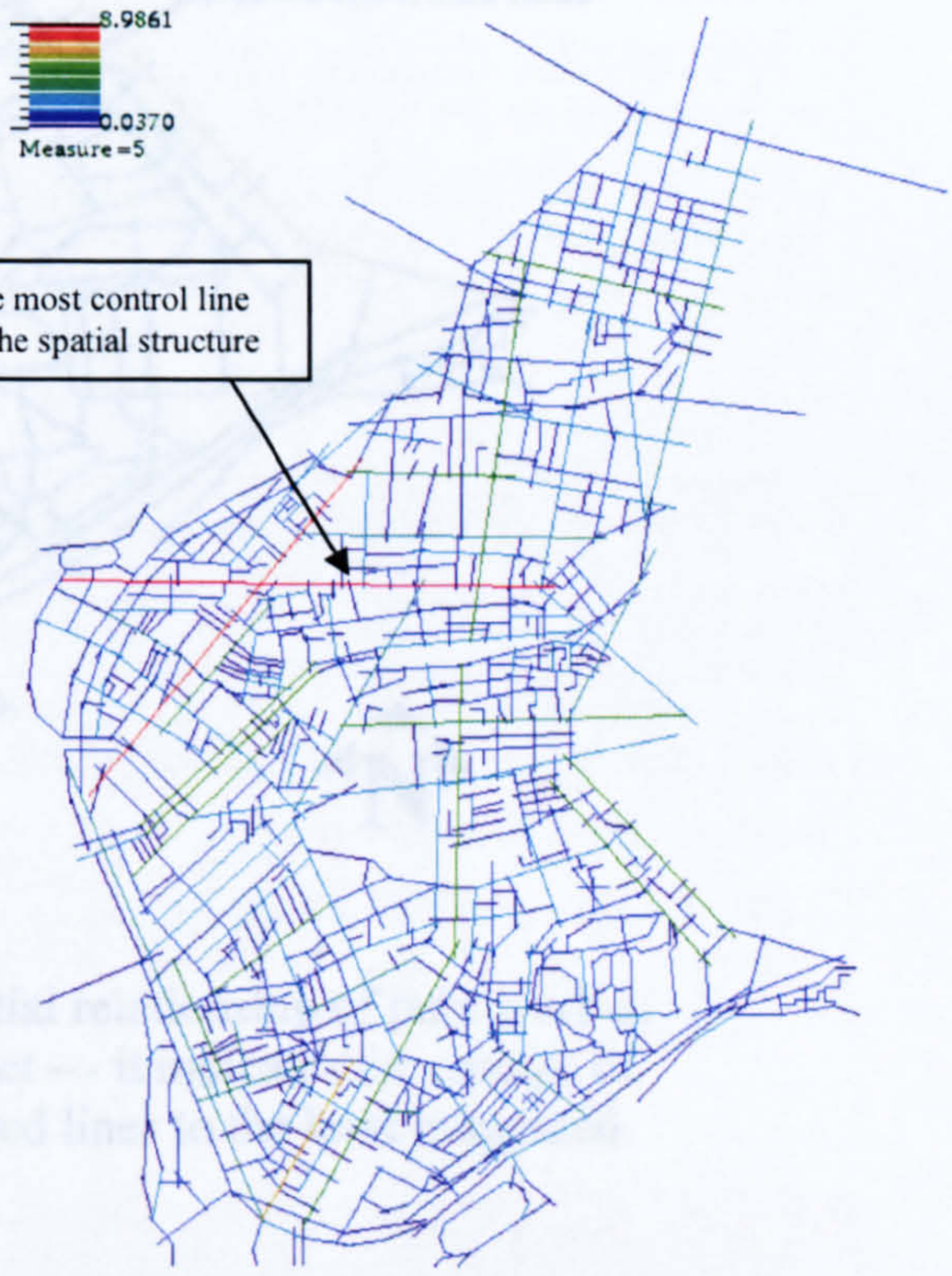


Fig.5.9d: The axial analysis of control lines (RA5) of Wanhua

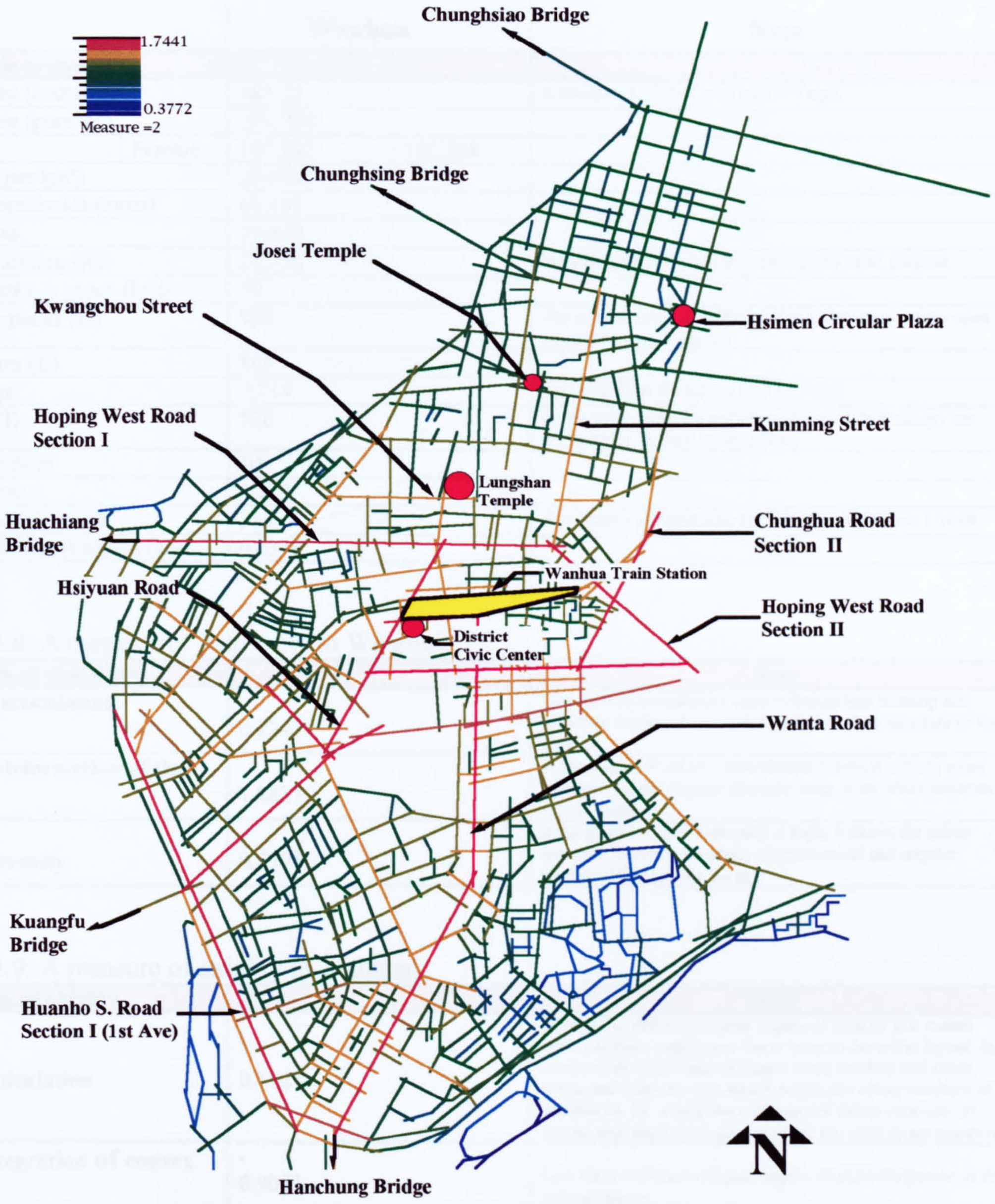


Fig.5.9e: The axial analysis of shows the spatial relationship of public urban spaces in the global context of Wanhua district --- it indicates the change of integration pattern from the most integrated red lines to the least integrated dark blue lines in the whole area.

Table 5.7: Characteristic measures of syntactic properties in the present Wanhua District (1998)

	Wanhua		Note
Syntactic properties			
Total Area (hectare)	885.22		It occupies 3.26% of total area of Taipei.
Population (persons)	209,780		
Male / Female	107,242	102,538	
Density (per km²)	23,698		
No. of households (units)	69,193		
Total Plots	29,429		
No. of Building sites	24,358		Including lands for temples, shrines and misc. purpose
No. of parks & green fields	59		
Convex spaces (C)	958		The convex space is defined as the widest space of the open space structure in the city.
Axial lines (L)	869		
Buildings	7,714		Counting from the survey map S:1/1000
Islands (I)	520		In this case, parks are not counted even if they occupy the whole block defined by the streets.
Thoroughfares	10		
No. of trees	4,123		
Deadend/Cul-de-sac	313		It is directly counted from the base map with scale 1/1000
Thoroughfares/deadend ratio	0.0319		

Table 5.8: A measure of convexity in Wanhua

Measures of convexity		Note
Convex articulation	0.1242	Low convex articulation value indicates less breakup and therefore more spatial synchrony in the urban structure or vice versa.
Convex deformation of the grid	1.8821	If the degree of convex deformation is low, it reflects more geometrical and angular characteristics in its urban structure or vice versa.
Grid convexity	0.5795	If the degree of grid convexity is high, it shows the urban structure has more tendency of geometrical and angular characteristics or vice versa.

Table 5.9: A measure of axiality in Wanhua

Measures of axiality		Note
Axial articulation	0.1127	Low value reflects a higher degree of axiality that means there are more continuous linear lines in the urban layout. In contrast, the high value indicates more breakup and more twists and turns per unit length within the urban structure of the district, i.e. a reflection of nonaxial urban structure, or curves and angles (not geometric) in the open space structure.
Axial integration of convex spaces	0.9071	Low value indicates a higher degree of axial integration in the convex spaces.
Grid axiality	0.0542	It is the measure of the comparison of an orthogonal grid with the number of islands, where high value indicates a stronger tendency to a grid structure and axiality or vice verse.

Table 5.10: A measure of ringiness properties in Wanhua

Numerical properties		Note
Convex ringiness	0.2664	It represents the number of rings in the system.
Axial ringiness	0.2937	If the axial map is nonplanar, the value of axial ringiness will be higher than the convex value or vice versa.

Fig.5.10a: Open space system of Wanhua District

Fig.5.10b: Transcription of convex map: 958 convex spaces

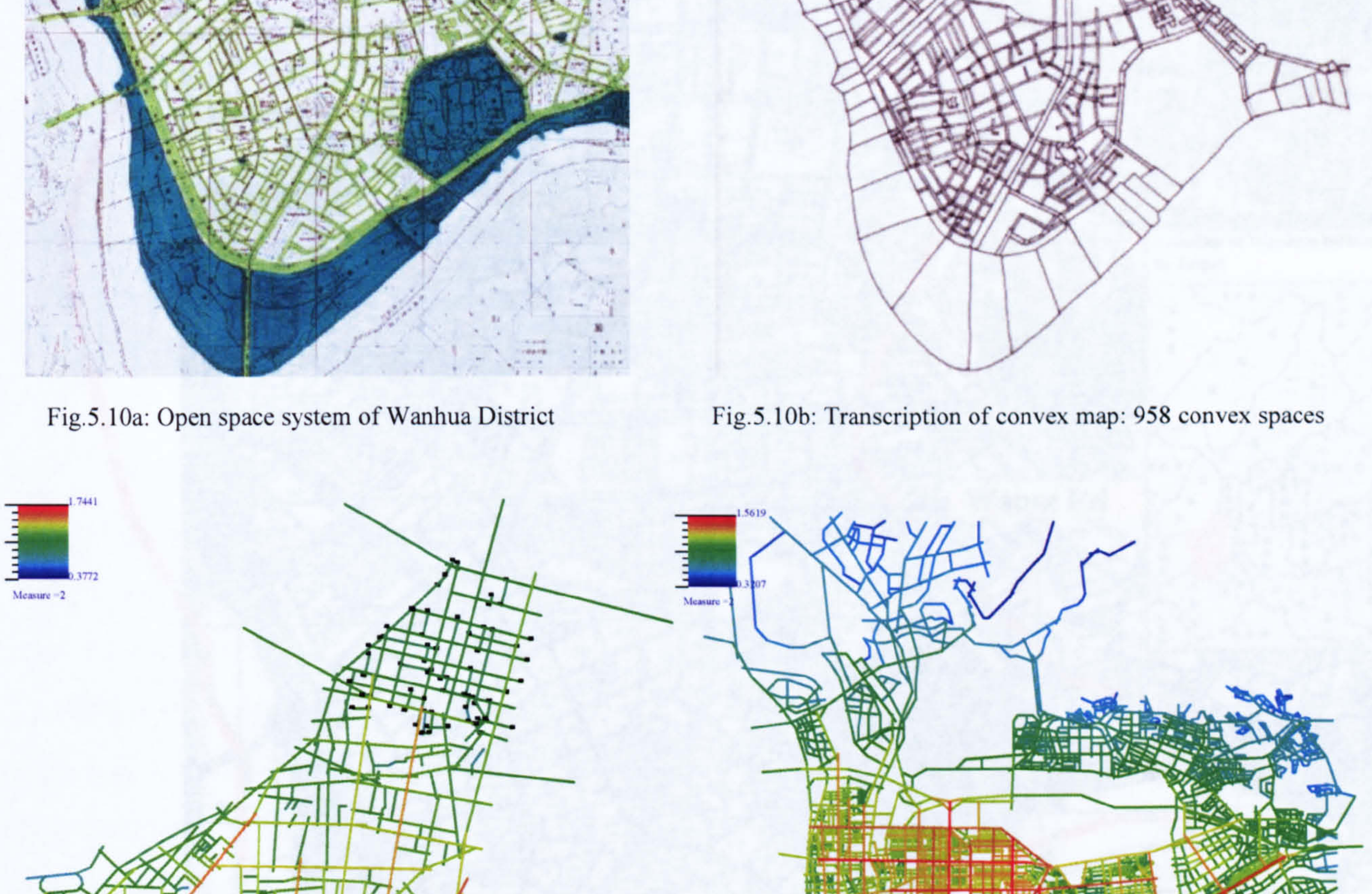


Fig.5.10c: Axial analysis of Wanhua District

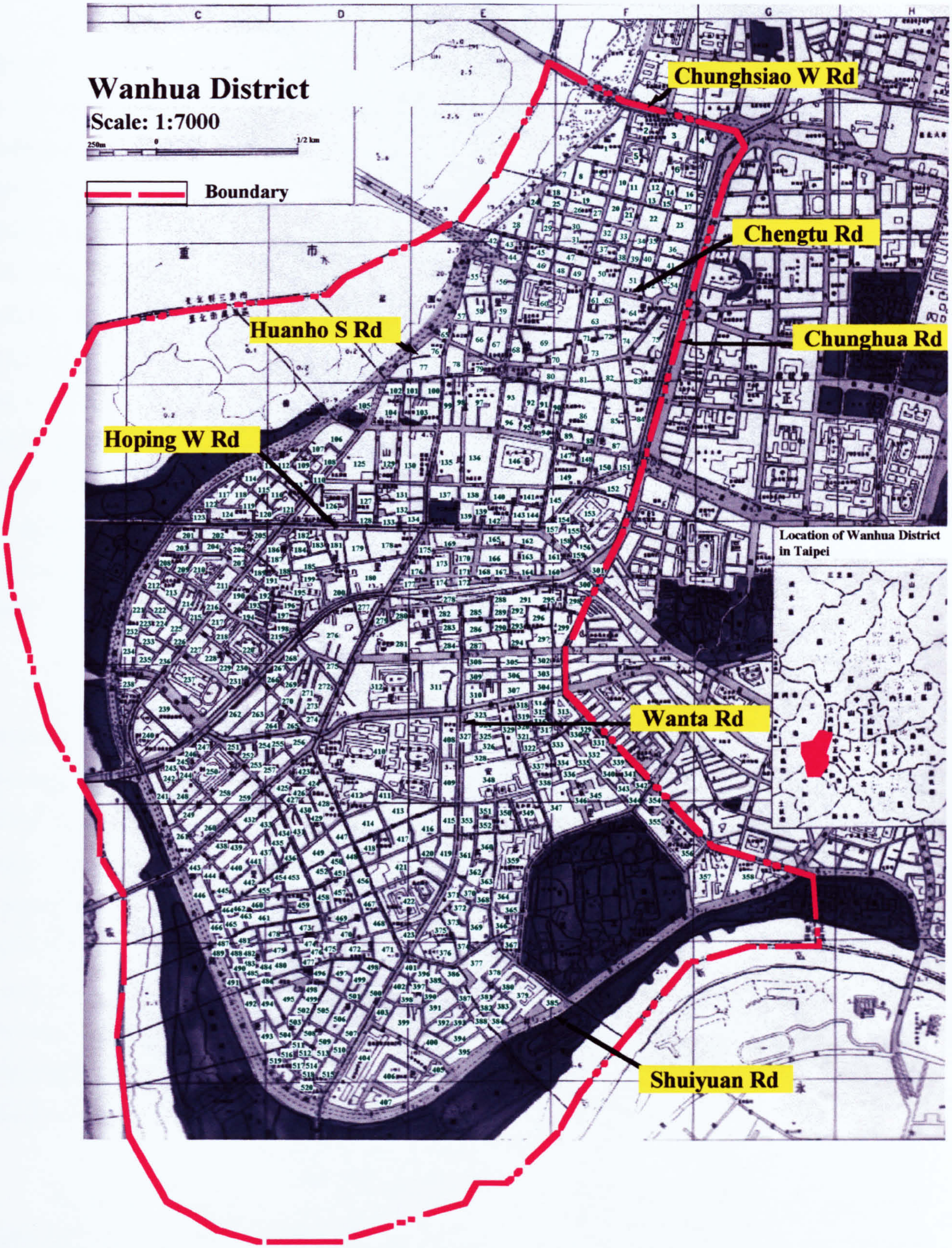


Fig.5.10d: Total number of islands in Wanhua District: 520

The revelation of spatial transformation in this old district is apprehended by examining the axial and convex maps, which are the global and local representation of the spatial structure in the theory of Space Syntax. Fig.5.10a is a map illustrating the current open space system including streets, parks and squares/plazas of Wanhua. The open space map is then transcribed into a convex map which consists of 958 convex spaces (C) as shown in Fig.5.10b, a convex space being defined as the widest area of open space structure in the urban area. Within the whole district, there are 520 islands (I), which are the total number of blocks consisting of continuous buildings, completely surrounded by open space as indicated in Fig.5.10d. An axial analysis of the district is carried out with the longest axial line connecting through all convex spaces as shown in Fig5.10c, which includes a series of axial maps to illustrate the spatial characteristics such as the degrees of global integration (Fig.5.9a and Fig.5.9e), local integration (Fig.5.9b), connectivity (Fig.5.9c) and control (Fig.5.9d) in the configuration of Wanhua area. A summary of these syntactic properties with their analyses is shown in Table 5.7 ~ 5.10. From these analyses, we can see that there is a significant change in the spatial structure of the old district.

From Table 5.8, the degree of the value of convex articulation is significantly higher in Wanhua area (0.1242) as compared with the city at different development periods. It indicates more breakup in the open space structure of the old area. From this perspective, the urban layout of the old Wanhua area has therefore more spatial asynchrony which indeed reflects the configurations of three different periods in history, namely the oldest section around the area of Lungshan Temple, the area of Hsimenting developed in the Japanese colonial period and the residential development at the southern region of Wanhua area during the 1960s and 70s. The higher value for the degree of convex deformation of the grid and the lower value of grid convexity suggest that there is much deformation in the grid structure. In result, it reflects characteristics of deformed and irregular patterns in the southern part of urban fabric that follows the older road patterns in the district.

In addition, a high value of axial articulation (0.1127 compared with the mean value 0.0343 of five periods from 1895 to 1977, as in Table 4.5) reflects a lower degree of axiality which means there is more break-up and more twists and turns per unit length within the urban structure of the old district. In other words, it further confirms a reflection of nonaxial and

deformed patterns within the urban structure of the district. The low axial integration of convex spaces, which compares the number of axial lines with the number of convex spaces, indicates there is a high degree of axial integration in the convex spaces. The low value of grid axiality denotes an axially deformed spatial system as the nonaxial organization of numerous temple squares and other public spaces can be commonly seen in the old district.

According to Hillier (1996:129-130), integration cannot be seen from a space, since it sums up the depth of that space from all others and can be read from the degree of connectivity of that space from all others, whereas more visible connectivity means more integration, which in turn determines the degree of intelligibility that can be deciphered from the shape of scatter. So when we further look at the depth values of Wanhua in relation to its context of global integration and local integration of the city, the structural change is inevitably reflected in the shift of the integration core in the urban city in the process of development. (See Table 5.11 and Fig.5.11~5.16 in which red dots represent the area of Wanhua district.)

Looking at the results of each scattergram on the correlation between depth and global integration from 1895 to 1998, the red dots form a tight scatter around the regression line which means that there is significant correlation between these two variables in each period (with high R square) though the values of the degree of global depth are ranged from the lowest 0.6910 in 1945 up to the highest 0.9640 in 1895. The values of mean depths in Table 5.11 have reflected a pattern of Wanhua's spatial change relative to the context of the whole city in its development from 1895 to 1998. Indeed, four stages of structural change can be classified according to the readings.

The first stage was the end of Ch'ing Dynasty before 1895 with the greatest depth of 14 steps. It reflected an organic pattern of early settlement in Ch'ing Dynasty with dominant short and twisted paths at that time. The second stage was the deconstruction of organic pattern with the expansion of deformed grids in the old district upon the Japanese Colonial Period between 1895 and 1945. In this stage, the spatial structure had a significant change as the mean depth drops from 14 steps to 8 steps in 1925 and to 4.5 steps in 1945. It indicated a new pattern of deformed grids was formed with longer and linear paths, with the new development of colonial grid quarters close to the new core of the city at the time. The third stage was the first post-

colonial period between 1945 and 1987 when the city was under the rule of authoritarian state. The spatial configuration of the city was distinctive with its expansion to the east of the city, with dominant grid pattern and the shift of concentrated integration core at the new urban area. At this time, the mean depth increased to 5.4 steps in 1956 and 6 steps in 1977 reflecting its structural change relative to the shift of the core of the city. The final stage is the second post-colonial period from 1988 to the present. A spatial analysis of the present city is shown in the axial map (Fig.5.16b). It indicates that the mean depth was increased to 8 steps in 1998. At this point, the spatial centrality reaches a stable condition as the depth value tends to close at the average mean value as indicated in the graph.

The reasons behind these changes are twofold. First, there is a significant change of spatial configuration from one period to the others, and from traditional organic pattern to colonial grid and post-colonial grid patterns. Second, the integration core is also changed in terms of its location and the effect of diffusion, which regulates the accessibility of people moving within the quarters or in-between quarters of the city. In this regards, two aspects of this analysis are worth highlighting:

1. There is a loss of spatial centrality in the old city centre and the configurational analysis indicates that centrality is shifted towards the new urban area at the east. As a result, the attractiveness of the old urban core has declined with the increasing spatial depth of the city.

2. The graph of mean depth study (See Figure 4.43a) shows clearly that there is a watershed in 1945 to demarcating the spatial changes of the old urban area from the Japanese colonial control to post-colonial transformation. These spatial changes can be explained in two ways.

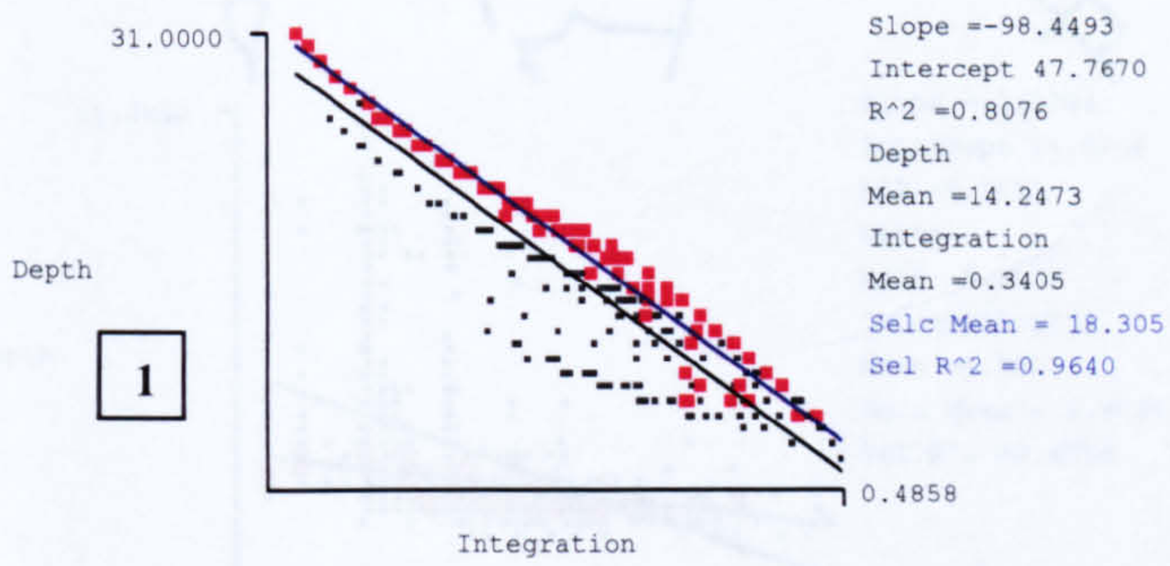
Firstly, the values of mean depth start to decrease from 14.2473 in 1895 to 8.0175 in 1925 and then 4.4854 in 1945, which is the lowest value in all periods. The highest value in 1895 reflects that the old settlement in the late Ch'ing Dynasty has a deeper spatial centrality and patterns of urban space which are regulated by a local integrated core rather than a global integrated core, as there were multi-central domains, namely 17 folk religious temples (see Figure 4.6) scattered within the settlement. These religious temples acted as spatial controller of the whole in terms of daily life and cultural practices. In this sense, the highest value of mean depth of the early settlement can be understood as the result of its

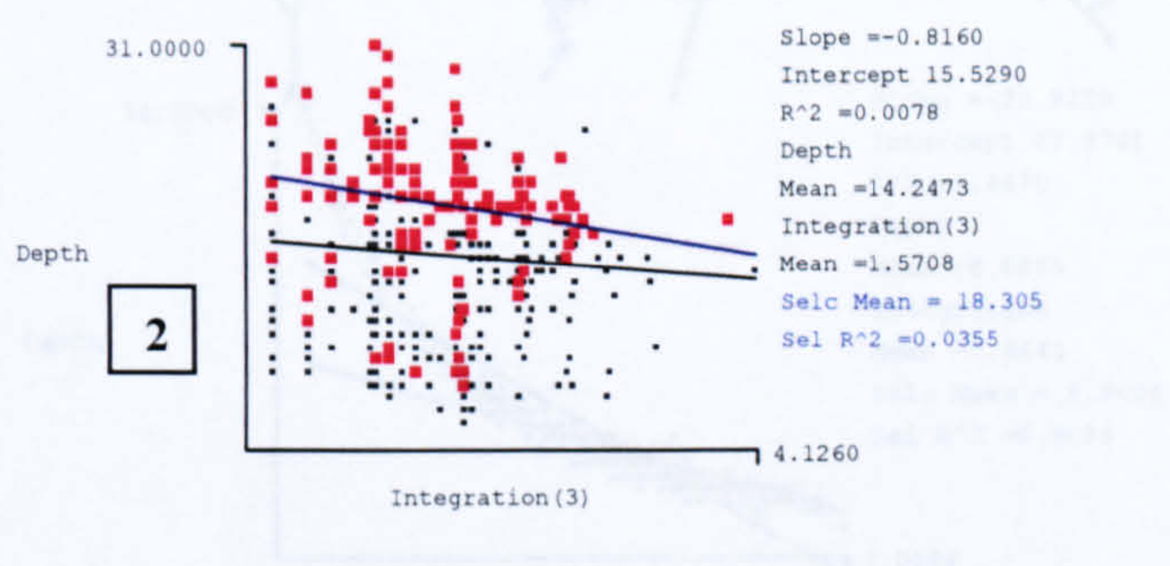
autonomous formation of organic pattern and the deep centrality of spatial functions in the neighbourhoods.

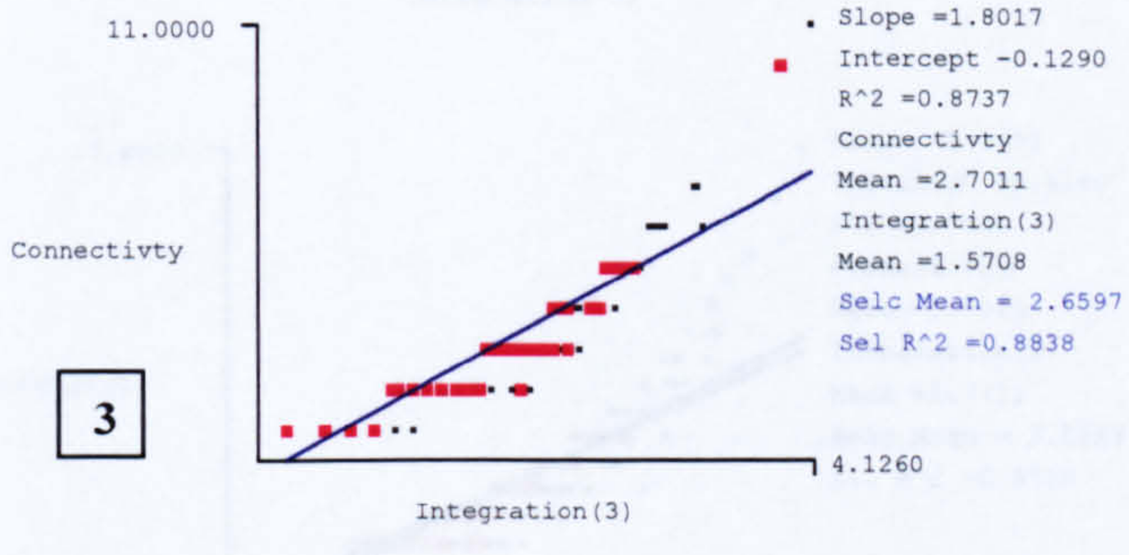
Secondly, the values of mean depths decrease from stage to stage in the Japanese colonial period showing that the spatial pattern of the city tends to be regulated by a global integrated core rather than a local integrated core. The phenomenon of decreasing spatial depth is a reflection of colonial sense of spatial control over the urban development of the city. One major new centre was formed to substitute for the old centre in the traditional settlement. The deconstruction of old organic form into new deformed grids and grid pattern of the colonial city leads to the shallower spatial centrality to all spaces than in late Ch'ing Dynasty. The lowest value in 1945 represents the nature of this kind of spatial pattern with a dominant central power in the colonial city. As time moves on, the spatial depth of the city configuration also increases from 1945 to 1998 until the whole pattern is in a stable condition because the spatial structure of the city was reconstructed from one centre into a bipolar centre. The spatial patterns also signify the representation of power on spatial control from one centre of an authoritarian state before 1987, into a decentralized city with two spatial centres.

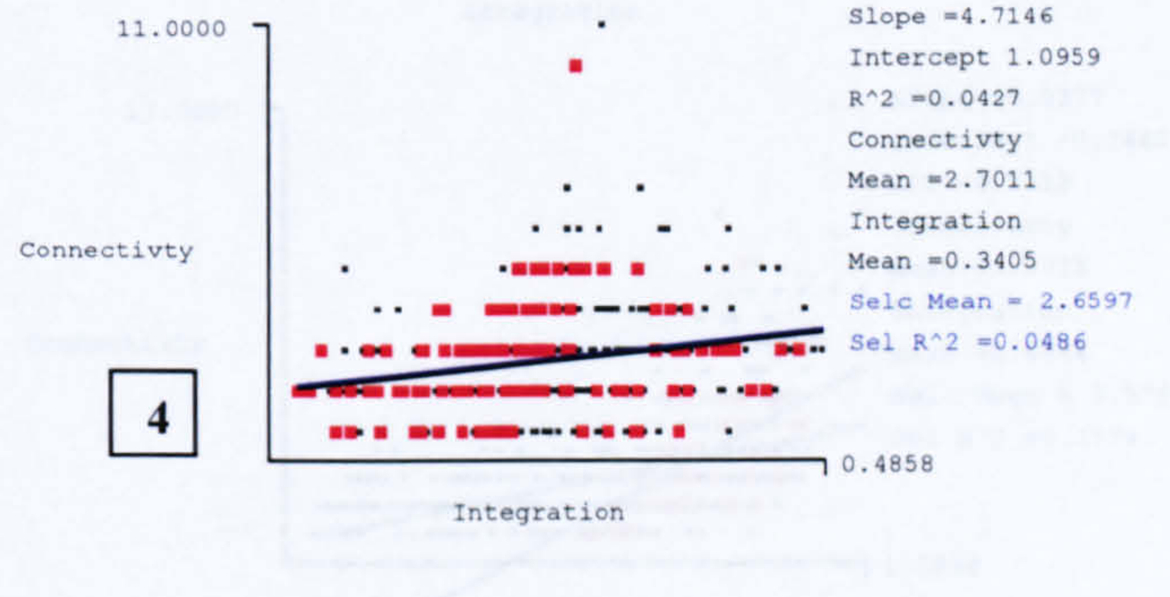
Table 5.11: A summary of spatial properties' changes in Wanhua from 1895 to 1998

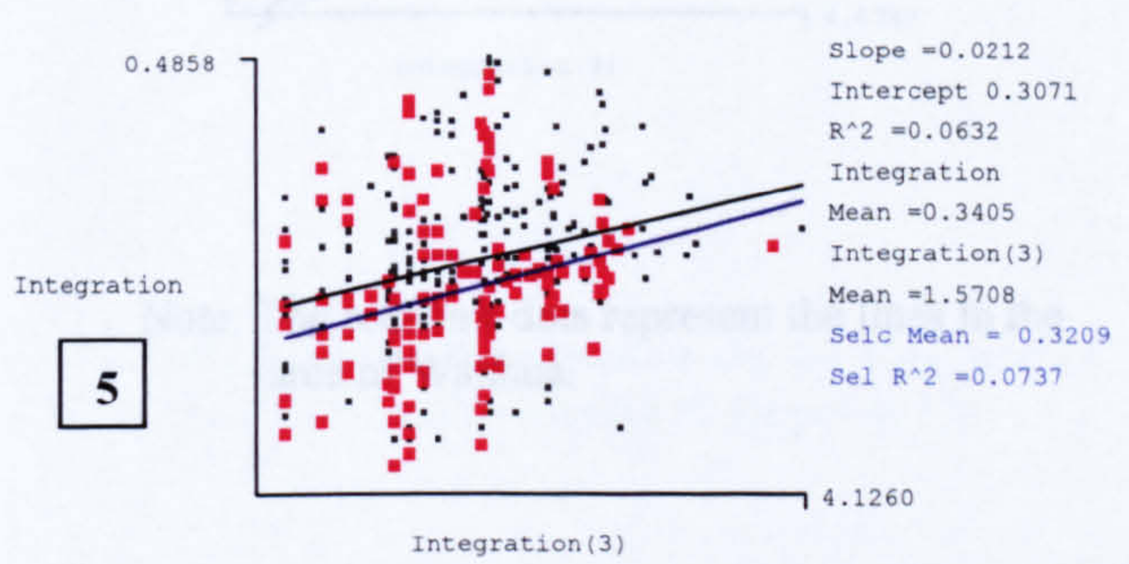
Years / Properties	1895	1925	1945	1956	1977	1998	Mean values
Local intelligibility	0.8838	0.8708	0.5575	0.8307	0.8079	0.8034	0.7924
Global intelligibility	0.0486	0.3774	0.3937	0.3843	0.2346	0.1900	0.2714
Local depth, R^2	0.0355	0.4754	0.5222	0.4746	0.3057	0.2603	0.3456
Global depth, R^2	0.9640	0.9038	0.6910	0.8512	0.9537	0.9518	0.8859
Mean depth (steps)	14	8	4.5	5.4	6	8	7.65
Local/global integration, R^2	0.5610	0.0737	0.7859	0.5431	0.3746	0.3066	0.4408











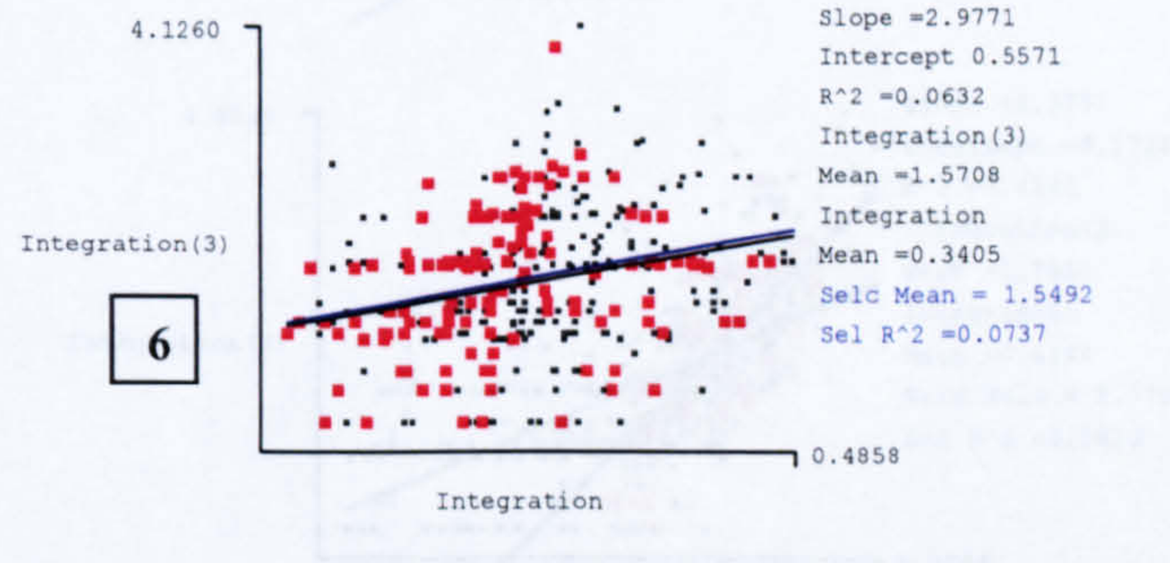
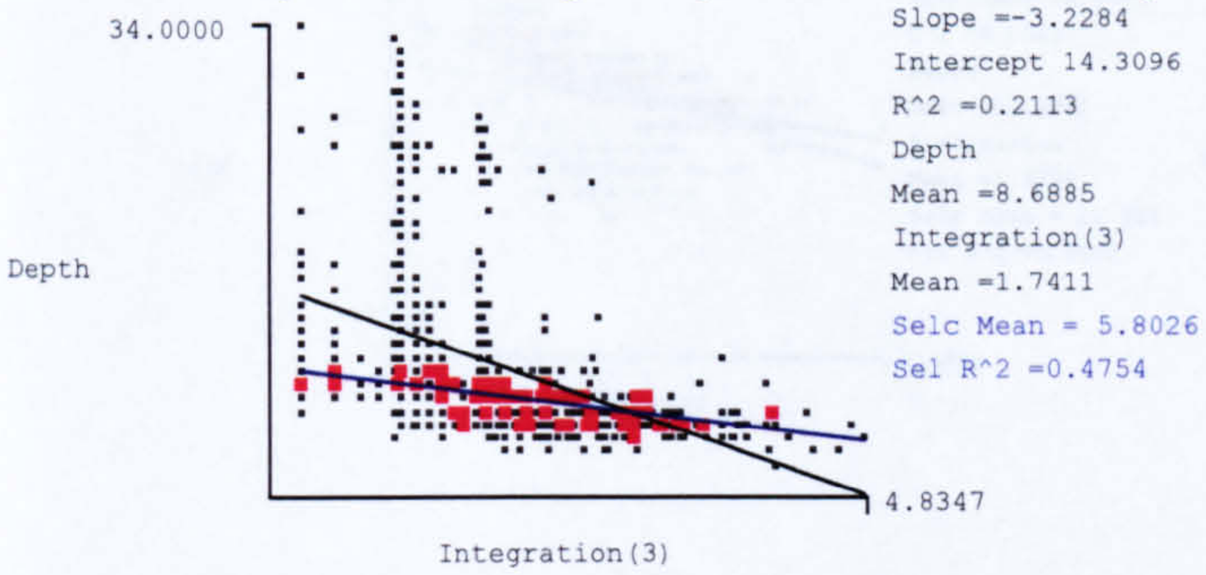
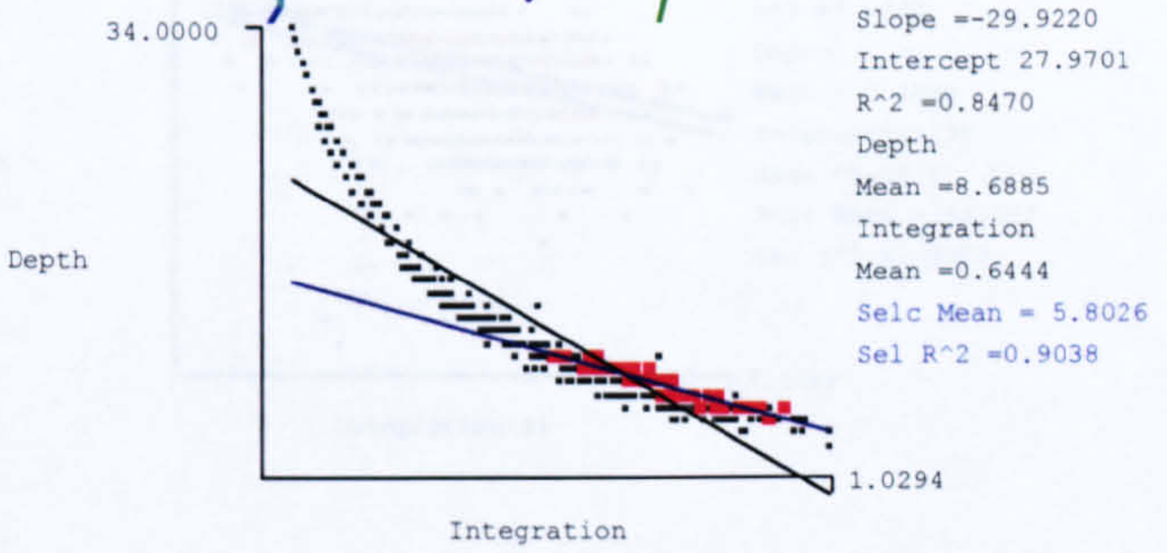
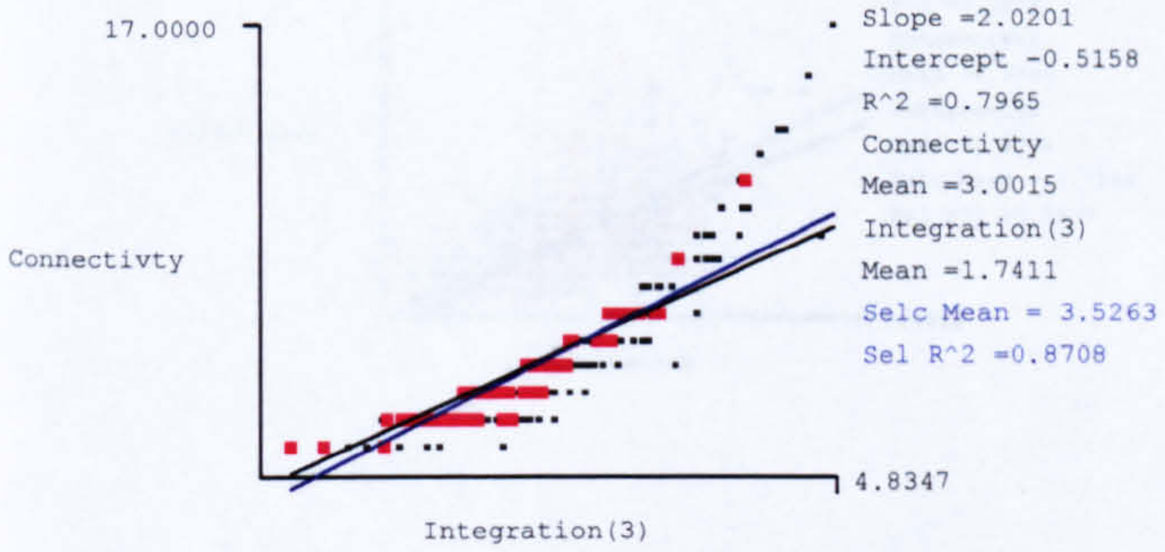
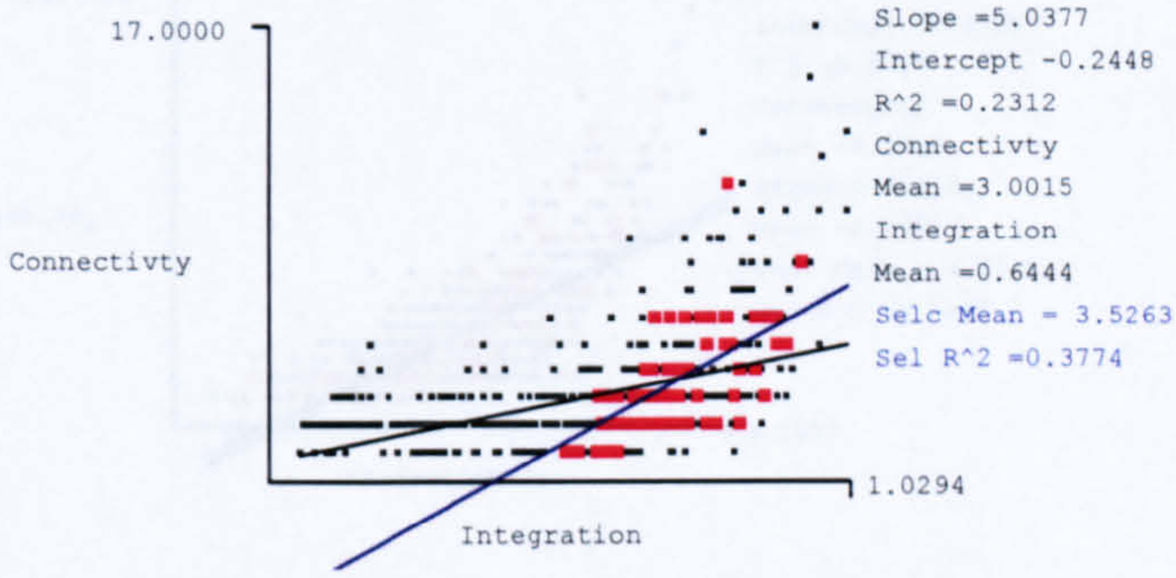


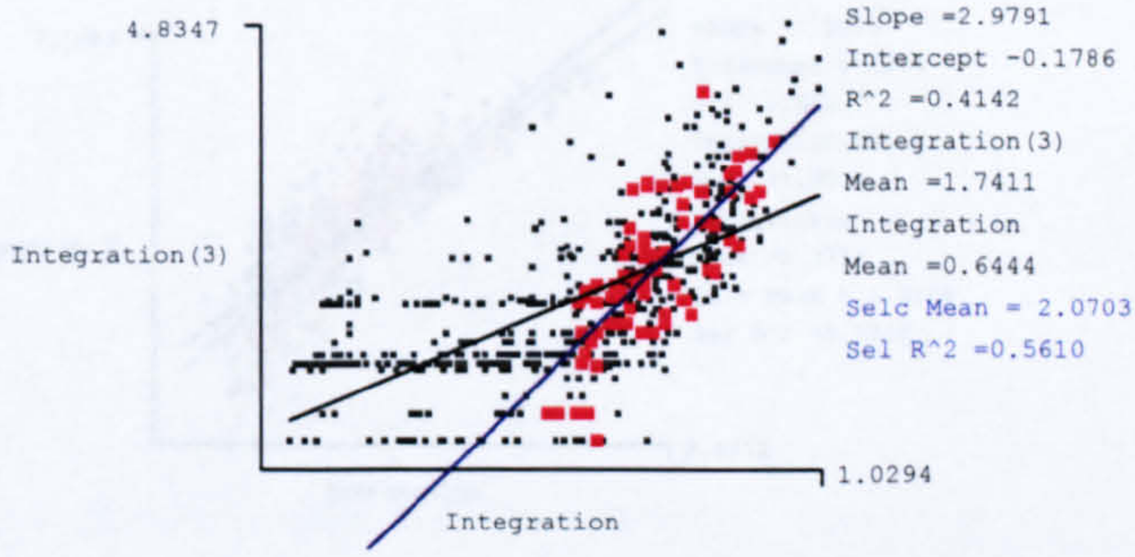
Fig.5.11: Scattergrams of old Wanhua (the red dots) within the context of Taipei in 1895











Note: The red/dark dots represent the lines in the area of Wanhua.

Fig.5.12: Scattergrams of old Wanhua (the red dots) within the context of Taipei in 1925

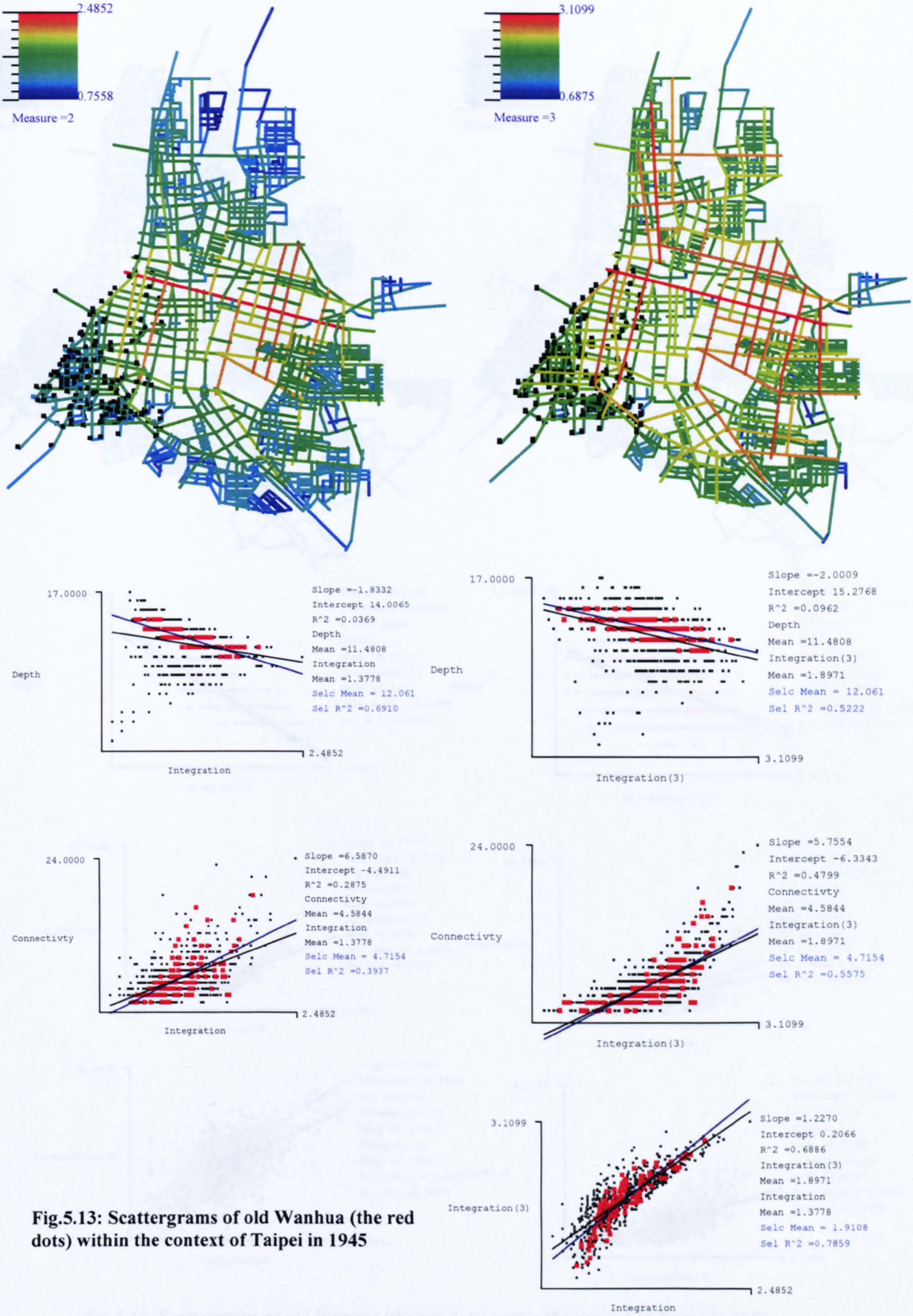
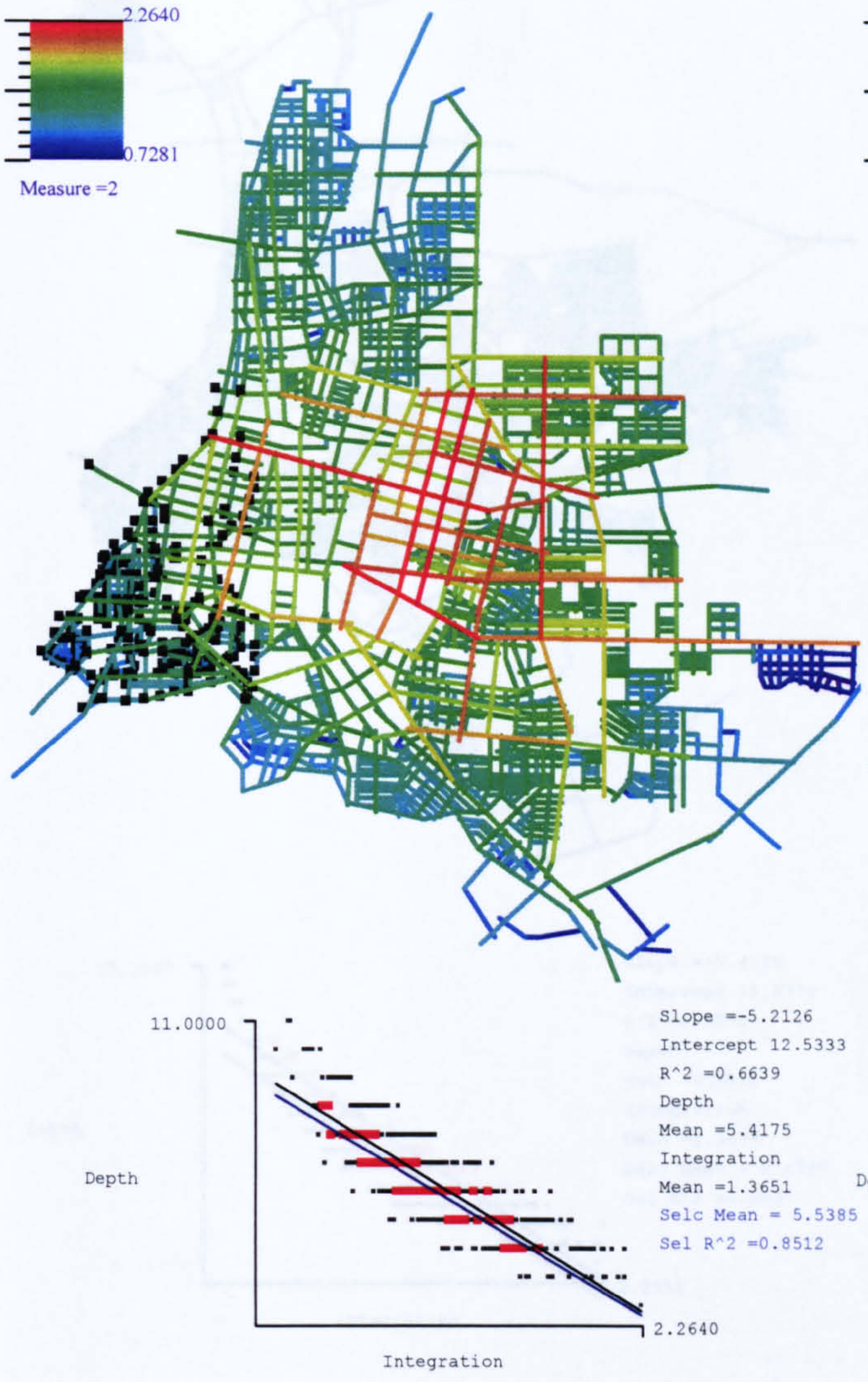
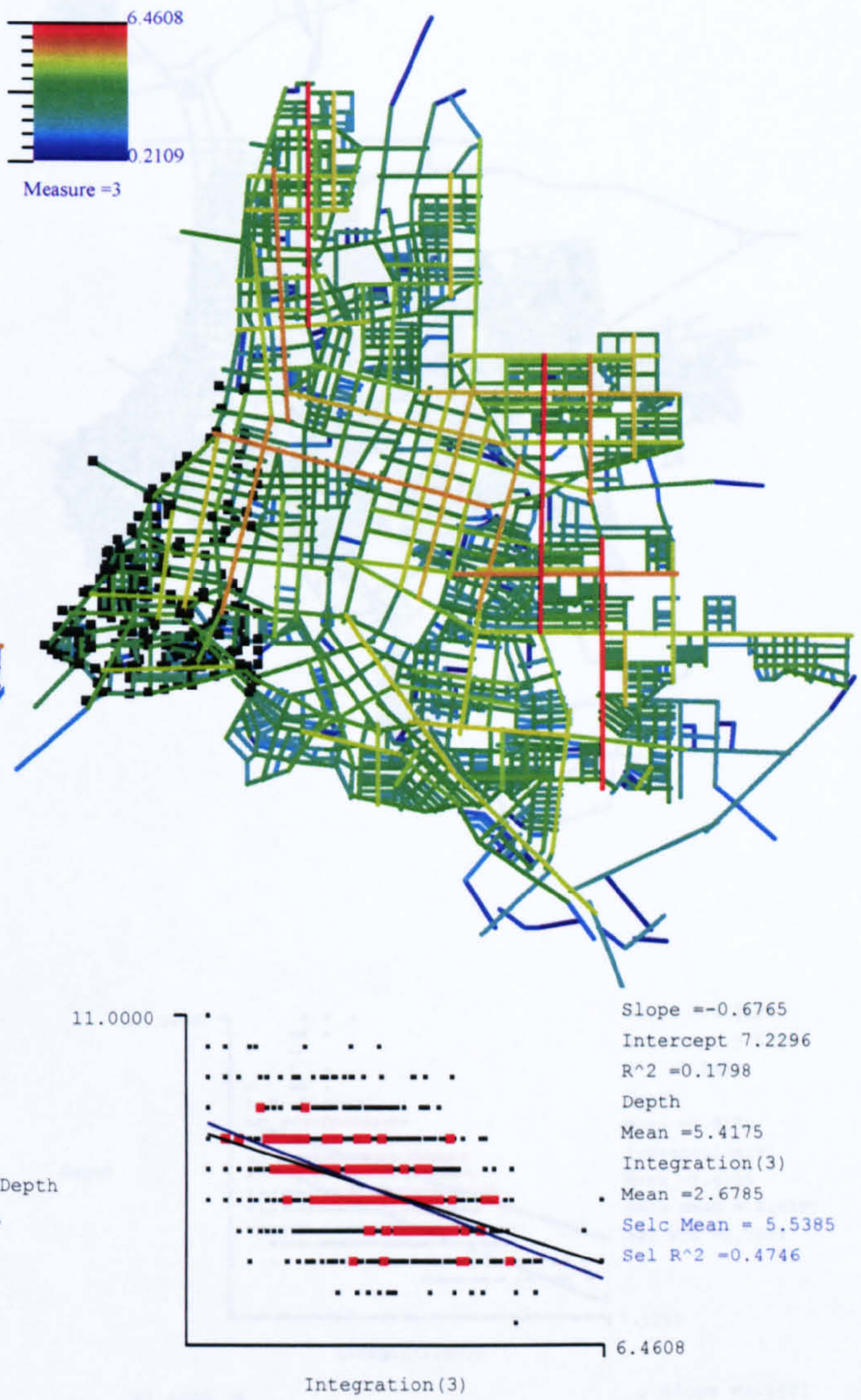
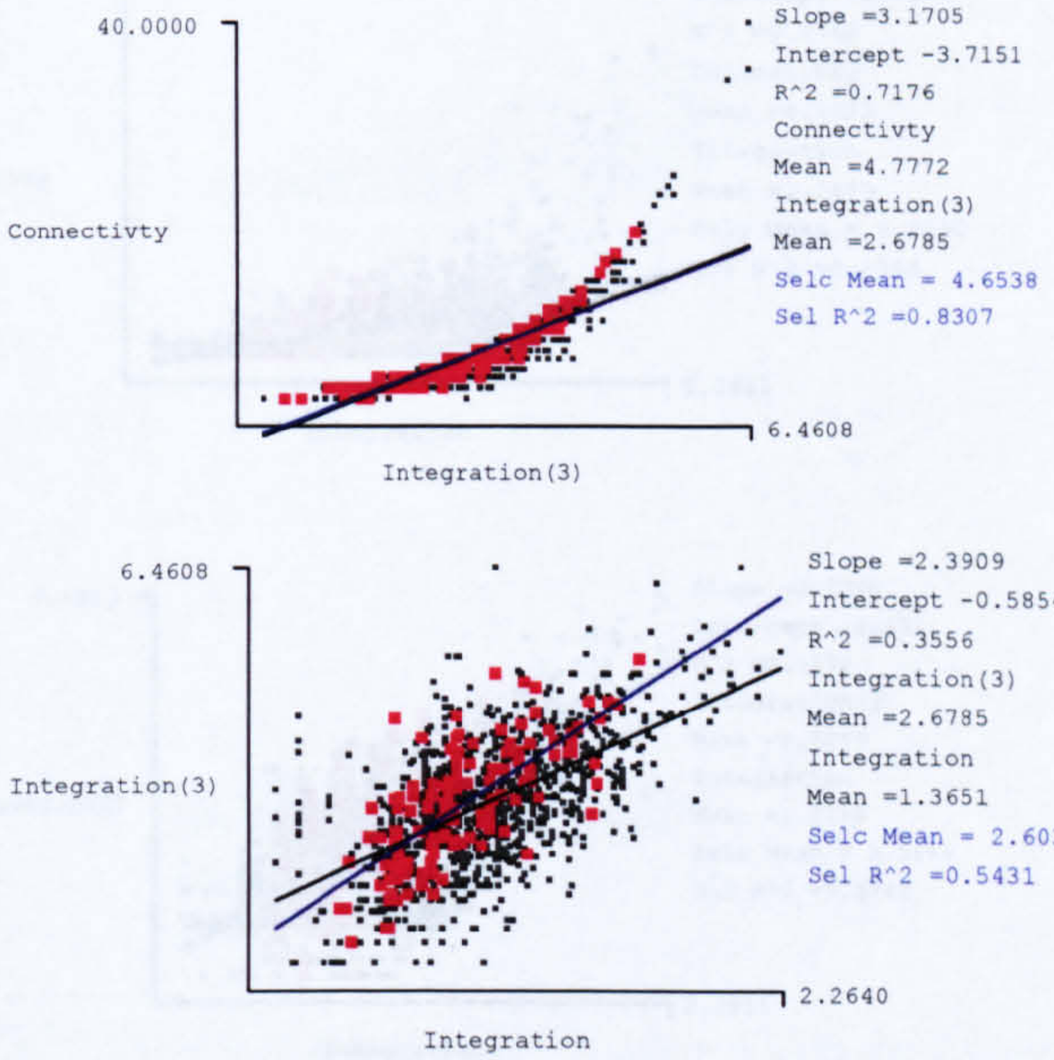


Fig.5.13: Scattergrams of old Wanhua (the red dots) within the context of Taipei in 1945







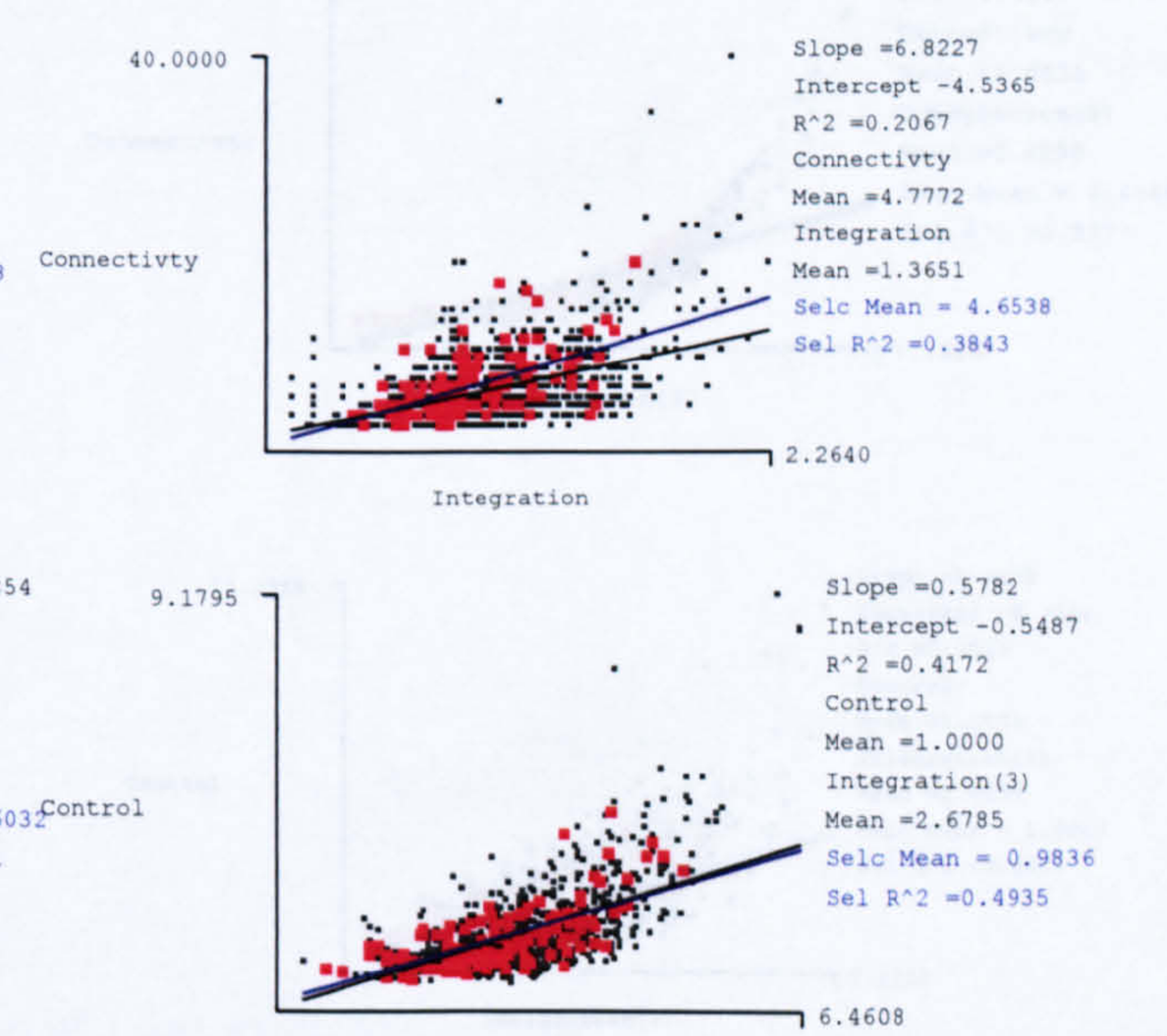
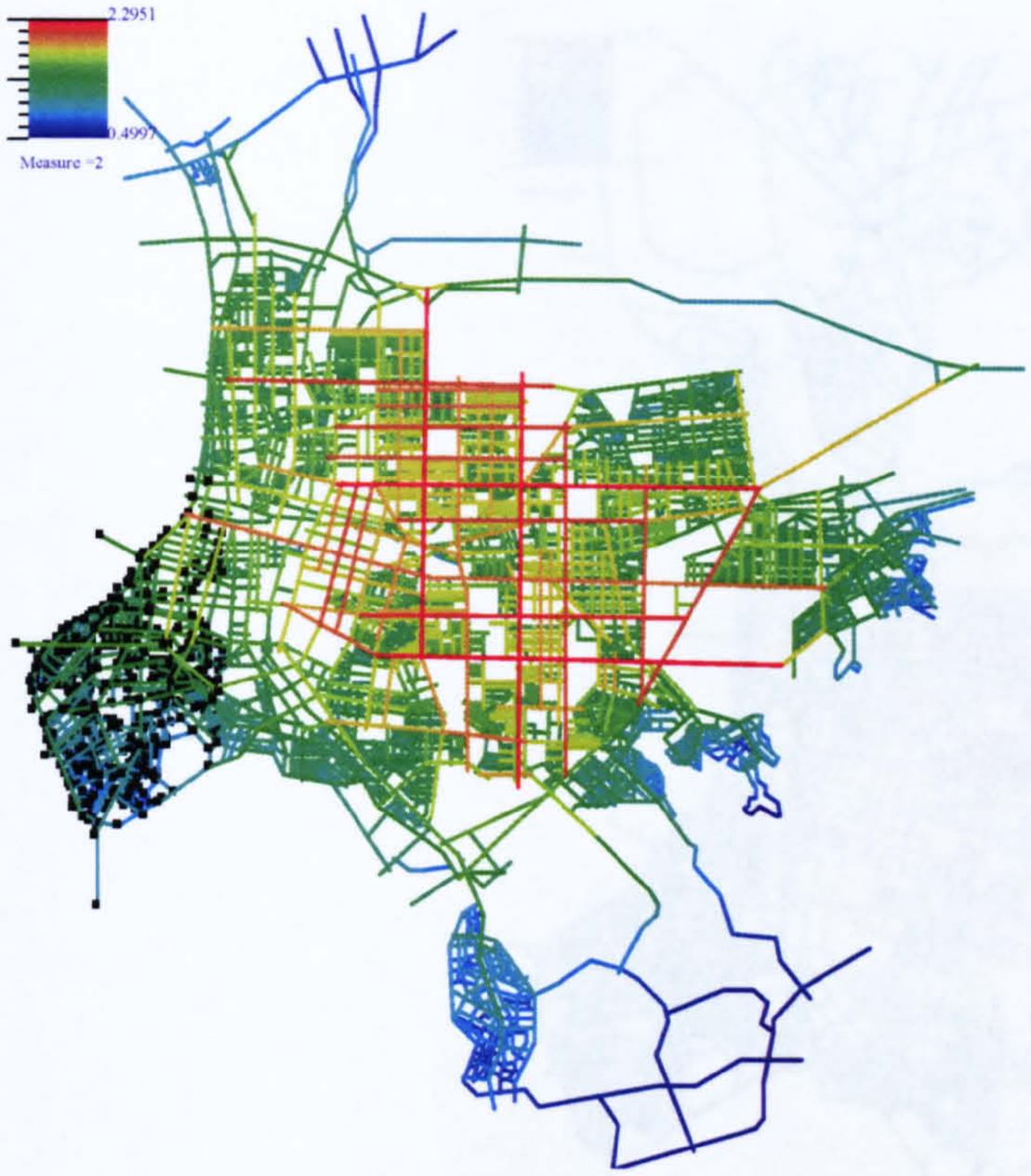
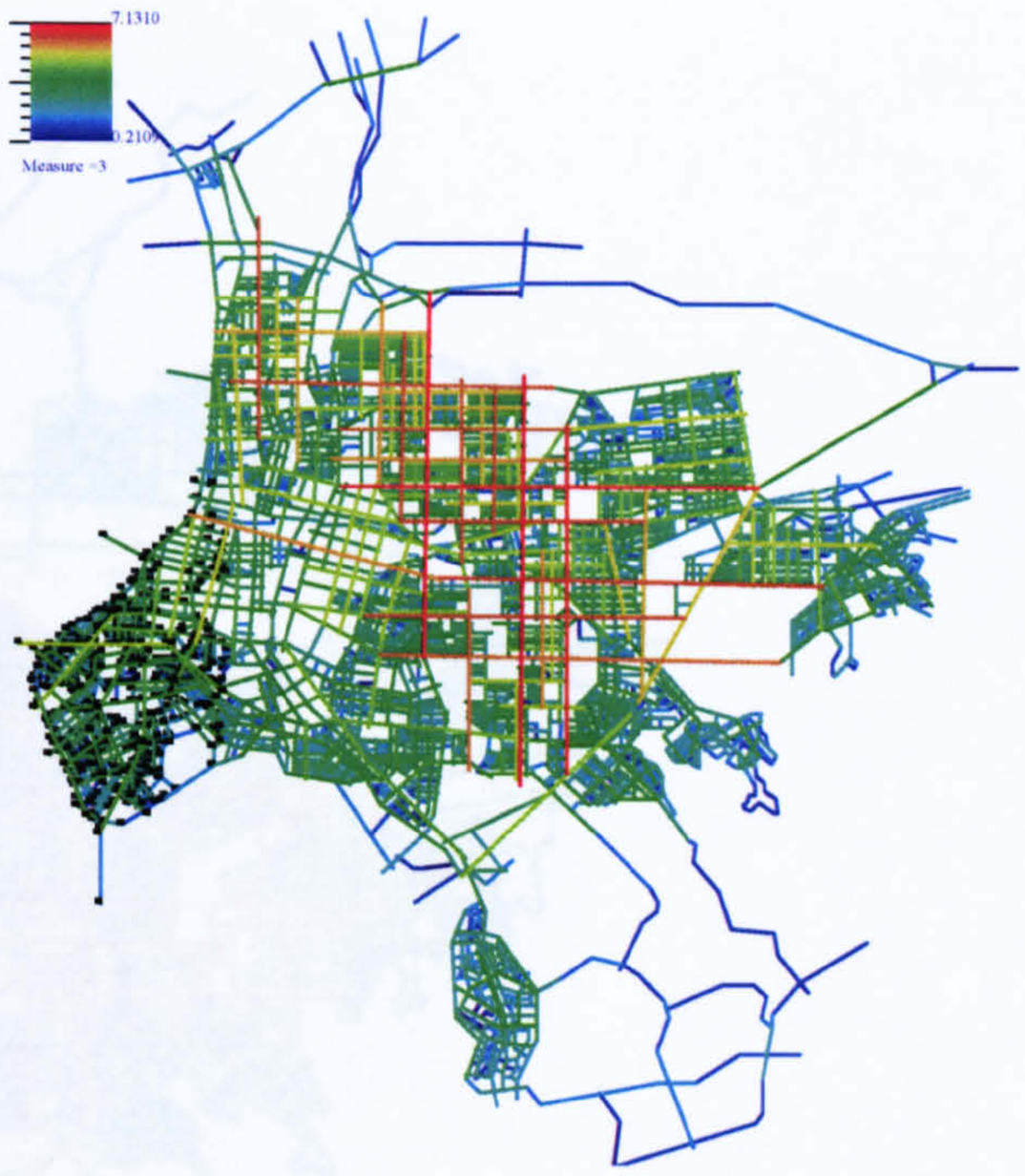
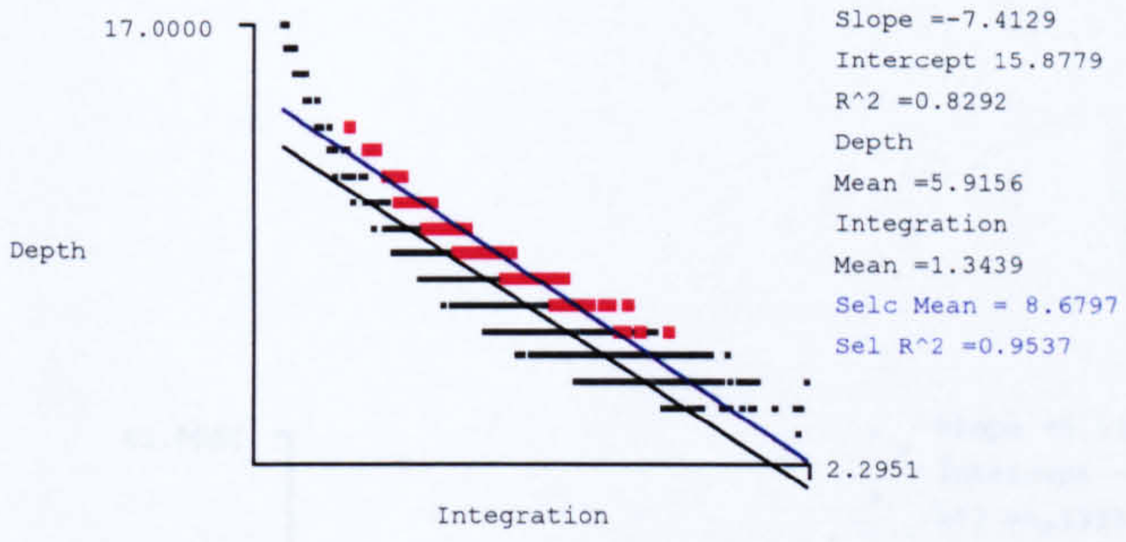
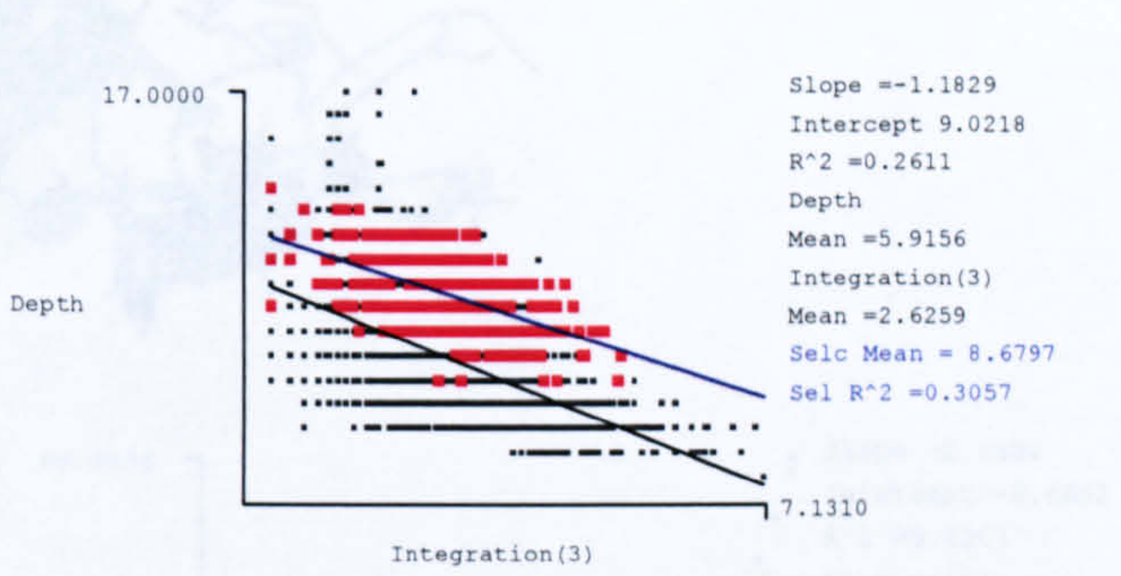


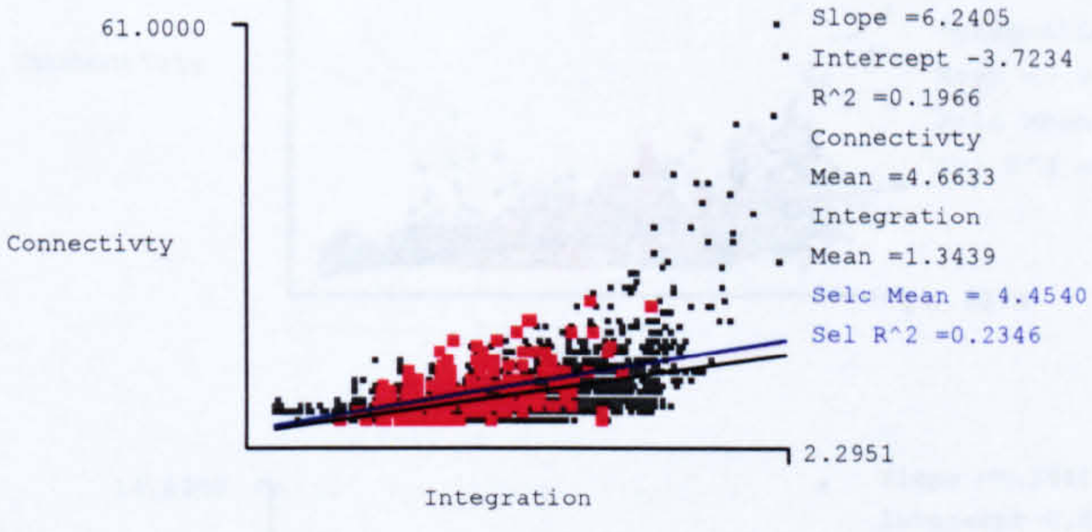
Fig.5.14: Scattergrams of old Wanhua (the red dots) within the context of Taipei in 1956

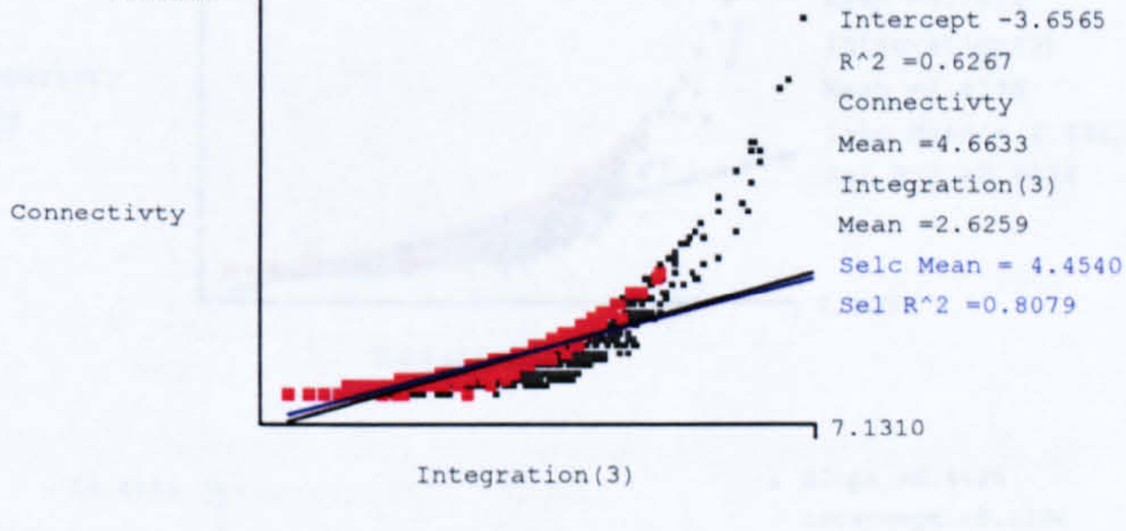


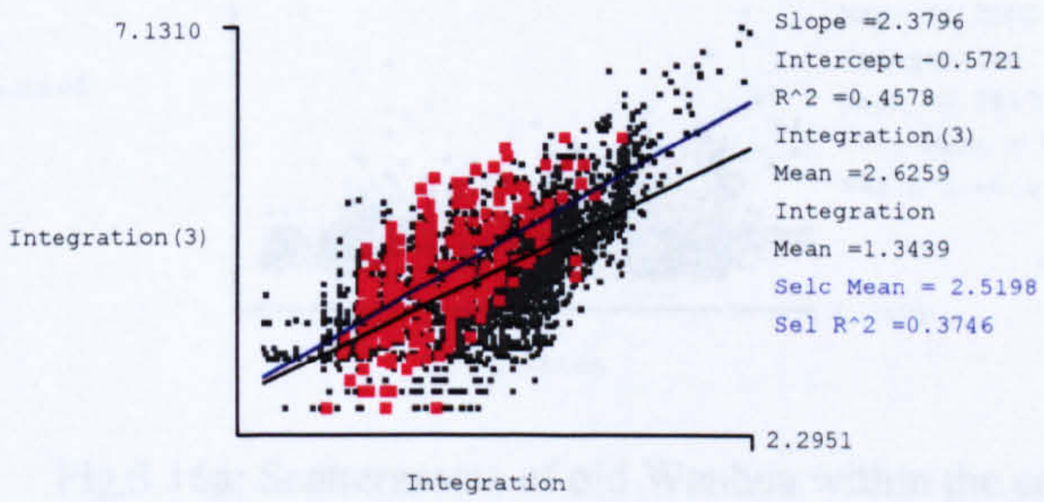












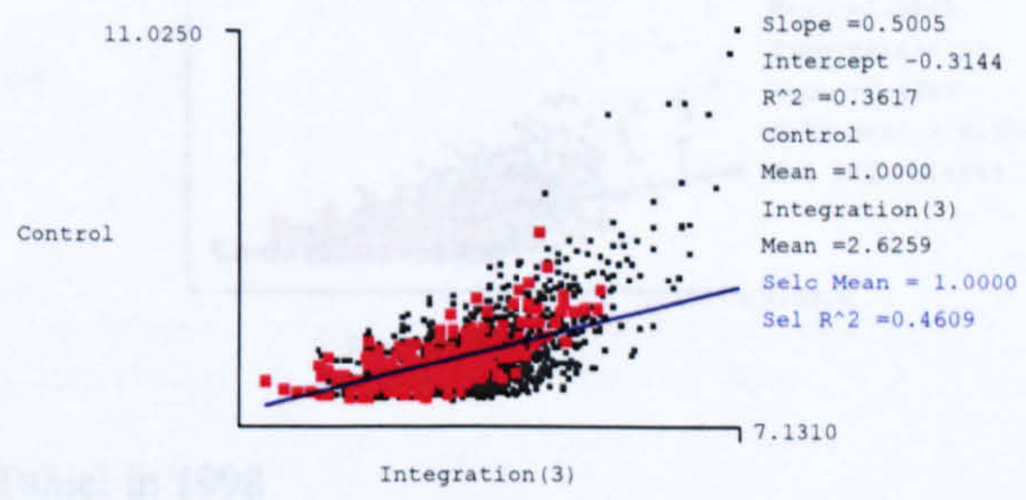


Fig.5.15: Scattergrams of old Wanhua (the red dots) within the context of Taipei in 1977

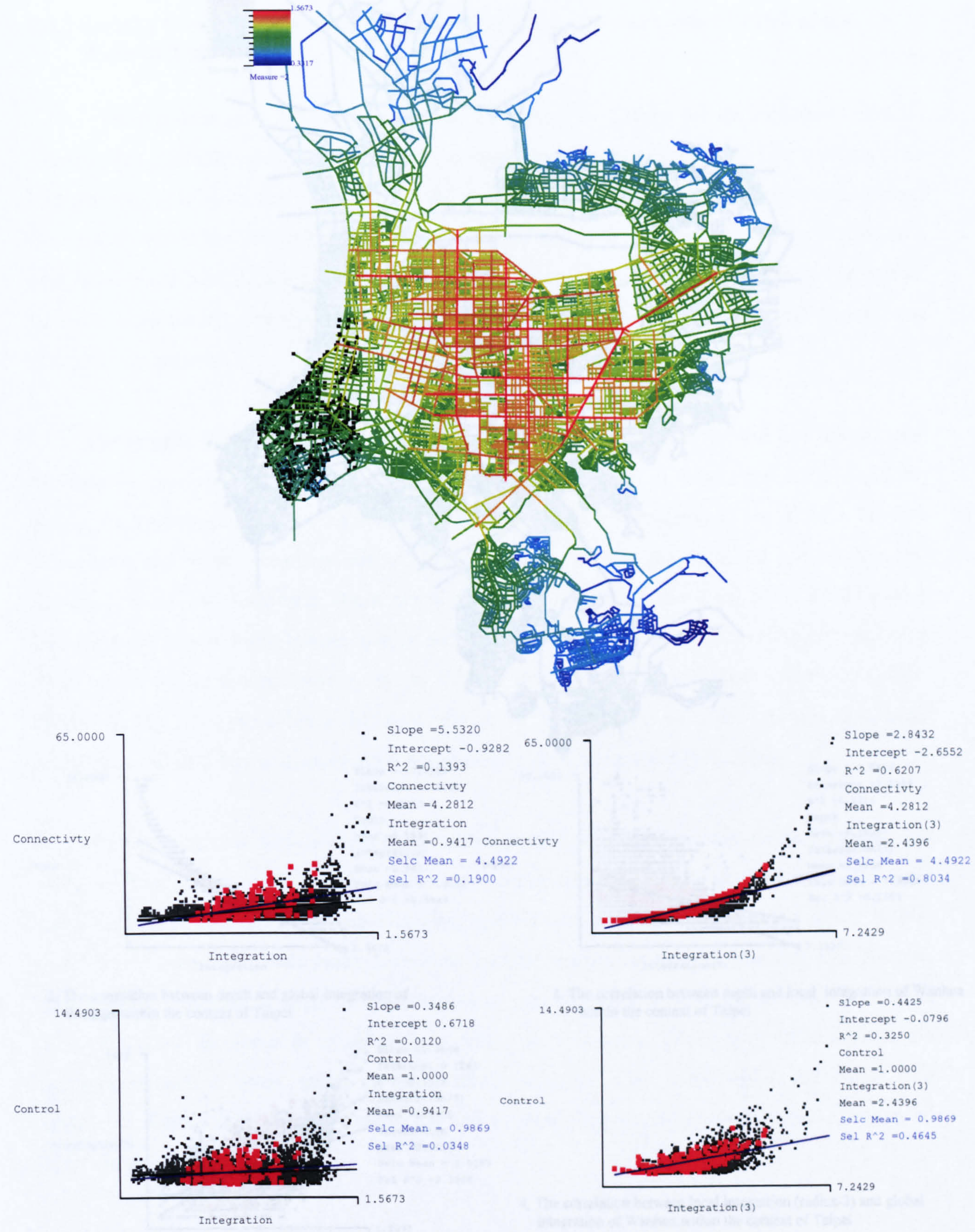
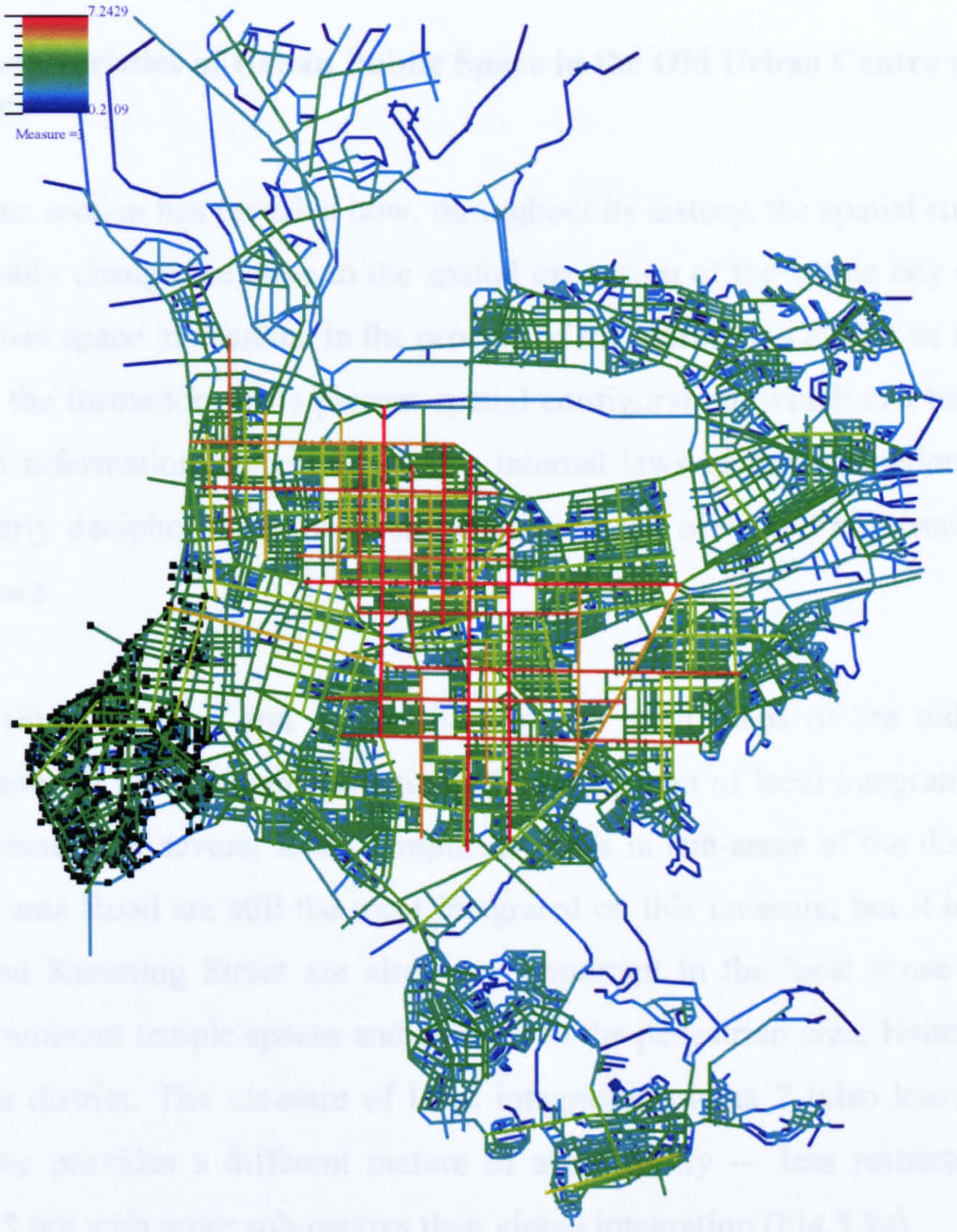
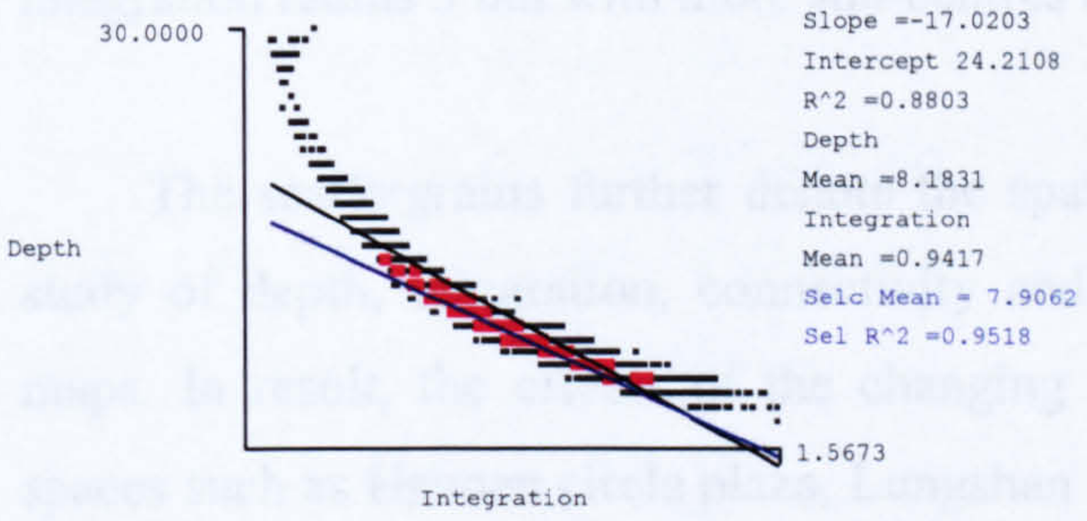
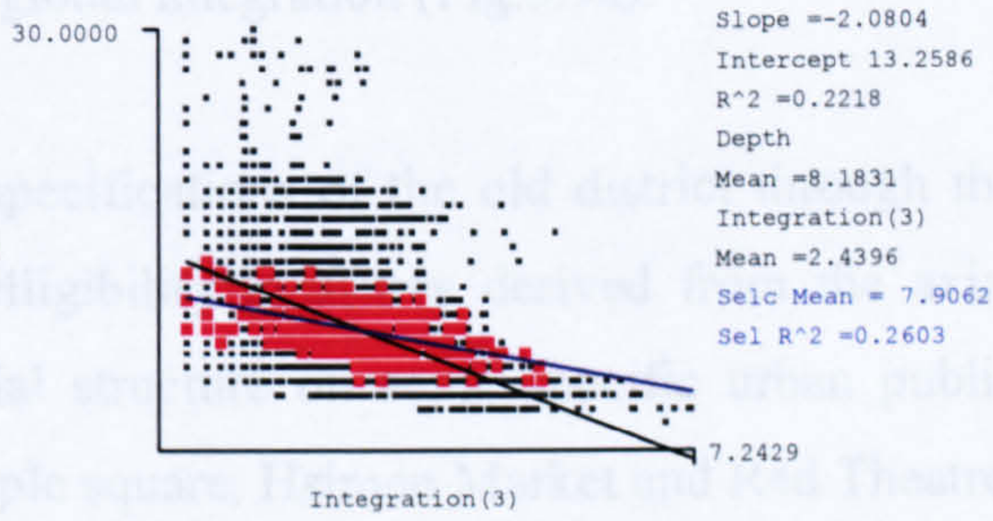


Fig.5.16a: Scattergrams of old Wanhua within the context of Taipei in 1998

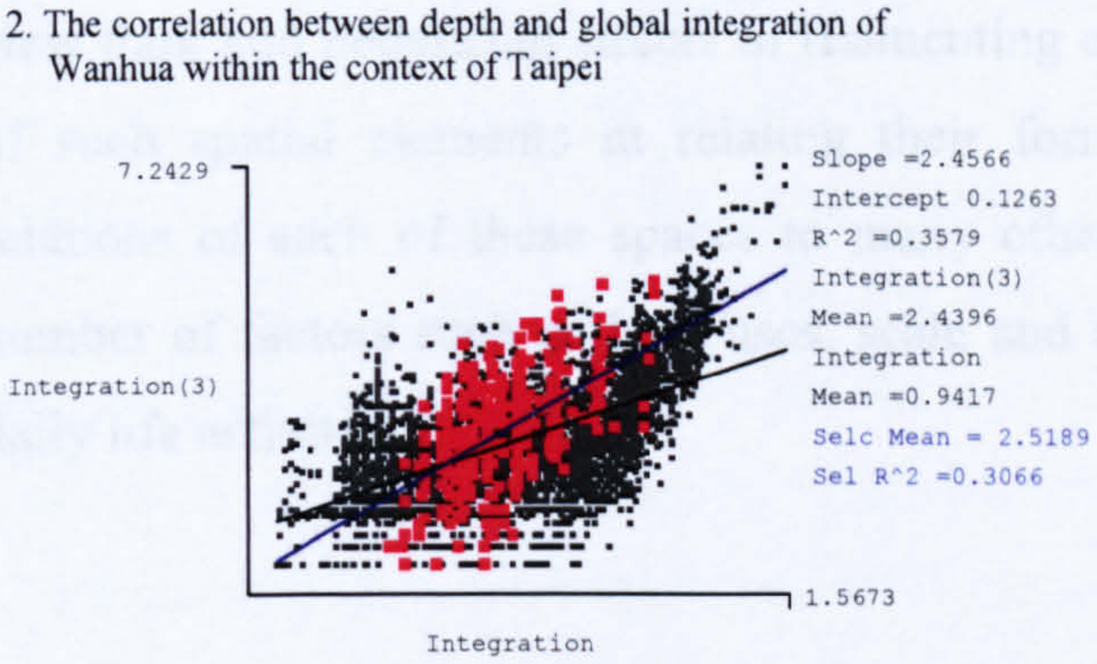




2. The correlation between depth and global integration of Wanhua within the context of Taipei



3. The correlation between depth and local integration of Wanhua within the context of Taipei



4. The correlation between local integration (radius-3) and global integration of Wanhua within the context of Taipei

Fig.5.16b: Scattergrams of old Wanhua within the context of Taipei in 1998

5.3.2 Specific Characteristics of Urban Public Space in the Old Urban Centre of the Western Zone

The previous section has revealed how, throughout its history, the spatial structure of old Wanhua has gradually changed relative to the spatial expansion of the whole city context. The restructuring of urban space in Wanhua in the process of transformation allows us to understand the reason behind the formation of its present spatial configuration, which can be viewed as a structured body of information subject to its own internal laws of transformation. The syntax analyses have clearly deciphered the hierarchy and meanings of spatial construct beyond our normative experience.

The graphs (Fig.5.9a, b, c and d) are the close-up axial maps of the old district that decipher its own internal laws of transformation. The axial map of local integration (Fig.5.9b) shows the predominance of several locally important lines in sub-areas of the district. Hoping West Road and Wanta Road are still the most integrated on this measure, but it is notable that Kangting Road and Kunming Street are also very important in the local sense as they pass through several prominent temple spaces and connect to the pedestrian area, Hsimenting, at the upper north of the district. The measure of local integration radius 7 (also known as radius-radius) in Fig.5.10c provides a different picture of accessibility --- less restricted than local integration radius 3 but with more sub-centres than global integration (Fig.5.9a).

The scattergrams further denote the spatial specifications of the old district through the study of depth, integration, connectivity and intelligibility measures derived from the axial maps. In result, the effects of the changing spatial structure on some specific urban public spaces such as Hsimen circle plaza, Lungshan Temple square, Hsimen Market and Red Theatre, New Park and pedestrian streets in Hsimenting can be explored through the intrinsic properties of such spatial elements in relating their forms to functions. These properties reflect the relations of each of these spaces to many others or even to all those which are linked to a number of factors such as land uses, scale and accessibility which determines the intensity of daily life activities.

The scattergrams in Fig.5.26 to 5.30 indicate that the mean depths of Hsimenting pedestrian streets, Hsimenting circle plaza, Hsimen market and Red House theatre, which all locate at commercial land use area (C4), are within depth of radius 5. Unlike the organic structure, the regular grid of Hsimenting, which was the layout in Japanese colonial period, is in principle a very integrated pattern since each line in the system is shallow to the whole system as compared with average depth (radius 7) of other spaces in the whole area. (See Box 5.1.) The shallow depth reveals that spaces in this quarter are being controlled by two long, straight and perpendicular streets radiating from the main core and passing through some prominent traditional nodes such as Lungshan temple and Josei temple. These routes make a secondary integration core inside the district whilst a homogenous texture of some short, segregated lines fills the spaces between them. (See fig.5.9b.) The logic behind this apparent pattern is revealed better by a comparison of spatial structure of the urban grid with the uses and scale of such spaces which tells us that there is a powerful relationship between the functional and cultural integrated spaces. For example, the changed depth of the pedestrian walkway system has redefined the spatial structure and order relative to the integration core as a whole and determines the location and general form of the principal buildings in this quarter such as the gateway building at Hsimen circular plaza and Red House theatre and Hsimen Market on Chengtao Road. (See Box 5.2.) The context here is distinguished by its major 3.7 storeys in average building height and narrow streets ranging from 12.73 metre to 16.36 metre. The scale of such spaces is approximately at 1:1.3 with respect to the ratio of horizontal to vertical dimensions. These facts reflect that the functional and cultural structure of the old city have fitted into the present-day spatial context as the most dynamic public activities and social contacts take place in this area.

Lungshan temple area (Fig.5.29) has the least depth value with only three steps relative to the other spaces. The shallow depth of this area is obviously also caused by the shift of integration core made by new streets, which are spatially the most shallow and best connected part of the district system, but the temple is socially accessible to the citizenry. In this position, the temple remains a dominant urban symbol as in old Taipei it represents secular and spiritual power and, as a prominent feature, it provides orientation. The case of the Youth Park, which is mainly deep within residential quarters, has the deepest accessibility with 12 steps in the area (Fig.5.30). The main effect of this deep sub-system on the growing city is that it forms a close-

bound introverted nature of space in this new segregation sector. Compared with previous examples, it is significant in serving the local rather than the global. This is why the very integrated strips made by the new streets such as Hoping West Road and Hsiyuan Road inside the old fabric cannot generate further integration for this area. This comparison reveals that this enhanced absorption stresses the effect of land uses and streets scale and plays a prominent role on the transformation of the old district. Overall, the Lungshan temple area still retains the greater accessibility, though the spatial displacement of integration core has transformed the original spatial logic in the historical pattern. But this is not the case with Josei temple which seems to lose its functional as well as its spatial importance. The significance of the depth difference among these spaces highlights the interface of such spaces in relation to the rest of the system as a whole, from the point of view of the social use and cultural meanings of layouts.

The values of intelligibility of five subareas of Wanhua area: Hsimenting pedestrian streets, Hsimen circle plaza, Hsimen market and Red House theatre, Lungshan temple area and Youth Park are 0.4104, 0.2285, 3445, 0.7191, 0.1789 respectively. The intelligibility value helps to capture a holistic view of large patterns from the experience of these small parts and this value is defined as the correlation between local and global measures of configuration. Among these subareas, Lungshan temple area has the highest correlation value (0.7191) while Youth Park is the weakest (0.1789). This result indicates the complexity of urban pattern in the old area. It reflects that some parts are very segregated and others are very integrated. Although the integration core of the city is shifted to the east as a whole, the internal structure of Wanhua district still retains its own logical order of spatial system from the perspective of depth and intelligibility study. It is read that Lungshan temple area is the centre of Wanhua district from where the spatial structure is diffused out to the northern part of Hsimenting pedestrian area and down south to reach the segregated residential quarters of the district. Obviously, three layers of spatial structure are formed in order as a result.

In responding to the change of spatial structure, an analysis of the new transformed spatial constructs implicitly conveys several meanings. Firstly, it is understood that spatial elements maintain a good accessibility if they lie within or less than seven steps within the district. Secondly, major commercial uses are clustered along major integrated streets with scale of dimensions ranging from 20 metre to 30 metre; but they are even more active in the area of

Hsimenting, which houses streets' of widths between 12.73 metre and 16.36 metre to form enclosed spaces that are obviously to encourage the attraction of spatial activities.

Box 5.1 -- Hsimenting Quarter: A place for recreational and leisure activities

The development of Hsimenting dates back to the Japanese Colonial Period when the old *Mengchia* area was extended to form a new quarter with small grid block pattern; an urban structure took form that is still visible in the city. The establishment of "Tokyo Kiosk Cinema" district in 1896 was a policy of the Empire at its earliest occupation in Taiwan. The cinema remains a legacy of cinema district in contemporary Hsimenting. The introduction of modern facilities in the heart of the town made this area to become a popular residential area in the region. Those people who came later had no choice but to shift their focus to cheaper lands at the edge of Hsimen. They removed the graves and built their own market, which became the cleanest prototype of a marketplace in Hsimen. The market was full of long lines of stalls, where Japanese often gathered to drink and eat after work. Here Japanese not only enjoyed the food, but also enjoyed the entertainment at the theatres. The circular plaza at Hsimen was once a place for Taiwan Expo, on the border between two areas – Japanese and Chinese (Geng K. King & Susan S. H. Wang, 2001: 105-113).

The first pedestrian network was established in the early 90s but poor urban design and management did not reestablish the success and attractiveness. However, the first failure of experience gave a good lesson for the second renewal of this pedestrian network which was carried out in 1999. A well-defined comprehensive and sensitive pedestrian system was designed with the help of local community including residents and shop-owners who established a self-organized "Hsimen Area Redevelopment and Management Association" to take charge of the quarter's management of business development and environment improvement.

The plan has transformed the spatial image of this old urban quarter. It not only provides the longest pedestrian commercial area in Taiwan with 1,153 metre length and 13 metre width of street space, but it also improves the spatial quality of this deteriorated urban quarter[70] by installation of new design features such as twelve entrance *pei-lou* (gates), 125 neon lampposts, two outdoor stages for performance, a light tower as an entrance landmark, as well as new patterns of pavement, greenery streets and sign boards. All these provide a new image to the area but are integrated with the original historical pattern, which is still preserved with a tight-knit mat of mixed-use two to four-storey Chinese courtyard and shop-houses and temples as focal points here and there, intertwined with small pockets of urban public spaces. The present Hsimenting quarter has successfully maintained a dynamic atmosphere of street activity though the types of activities might not be the same as in the old time. The characteristics of this quarter in the historical development have given it a special role as a miniature milieu of the old areas in the city.

[70] See *Chinatimes Evening News*, 20/05/1999, p.12

Box 5.2 – Hsimen Market and Red House Theatre

In 1895, the forward-looking mainland official then in charge of the island, Lau Ming-Ch'uan, developed a new street (Chiseng Street) which was the main road connecting old Mengchia and the inner walled city. Then Hsimen Market (literally West Gate Market) now located at Chengtao Road was established as the oldest market in Taipei. It was the first public market and was also the first area of the old district using electrical light in Ch'ing Dynasty.[71]

Hsimen Market was built as a wooden structure in the early stage. In 1908, it was reconstructed in brick. The buildings were made of two sections. One was a two storey height structure in octagon shape while the other was a single storey height cruciform shape market. Under the urban planning of the Japanese, it became a commercial centre and integrated with the surrounding areas as a whole to become a very popular district for Japanese shopping as well as a residential place. Due to the growth of commercial activities, a line of single storey shops was expanded along Hanchung Street. In the colonial period, the Hsimen Market was a place for selling expensive goods and stuffs like the High Street today. The major customers of the market were Japanese. The commercial activities of the cruciform building were very active. It contained 205 stalls. Goods and products were high quality and expensive such as fresh fish and vegetables, groceries, while the octagon building contained a variety of stalls for selling flowers, books, antiques, and Japanese products. The market place was a popular recreational and shopping paradise for people at the time. In particular, when the New Year was coming, a sea of people crowded together all over the place for fun and celebration. In 1951, the octagon building was transformed into a performing arena for local activities. In 1956, the Red House Theatre joined the arena and became one of the favourite programs for local people. Later it became a magnet for the formation of theatre culture in Hsimenting (Western District). During the 1970s, it was its heyday in business and a market place attracting for all people. Unfortunately, it was downsized after 1980s.

Both Hsimen Market and Red House Theatre were renovated in March 2002. (Fig.5.21.) The cruciform market has provided 99 shopping stalls and each of them has 3 pings[72] in area that make it return to a energetic social gathering place for local residents. The theatre has also been transformed into a new place for cultural performance with local character and has become a focal civic space with a sense of locality. The market has renewed vitality as a gathering place for local residents.

Fig.5.17: The renovation of Hsimen market and Red House Theatre in Hsimenting.

[71] See *Chinatimes*, May 4, 2001, "Demolition of Hsimen Market" (93 years old), p.17

[72] 1 ping is equal to 3.304 square metres.

•Urban public spaces: streets and squares/plaza

Streets and squares/plazas are two features of public urban space still prominent in present-day old districts of the city. Indeed, streets are the most public and dynamic part of an open space system in the old districts where narrow street space is common but a grand boulevard space, Chunghua Road, provides a distinguished edge to the area. Chunghua Road was once the site of old city fortress wall in Ch'ing Dynasty and then was transformed into a three-lane boulevard during the Japanese colonial period.[73] Besides, four distinctive types of present day plazas and squares differentiated by their functionality, namely civic plaza, commercial plaza, recreational plaza and religious square, have also characterized the urban fabric of the present old Western zone.

• Street space

Fig.5.18 Chunghua Road ---- the widest boulevard with 10metre width sidewalk is an important edge to the present-day Wanhua District

In the context of the old city centre, narrow street space is a common pattern that is the remnant and legacy of Ch'ing Dynasty and Japanese colonial period, such as the streets in quarters of old Mengchia and Ta-tao-ch'eng (eight metres in average width); and Hsimenting (sixteen metres in average width). This street pattern recalls the earlier type of streets originally designed to function for pedestrian, wagon, or horse-cart uses. Its intimate scale encouraged pedestrian oriented activities in these streets and became a part of urban culture and streetscape in the old city. The obvious examples are pedestrian streets in Movie Theme Park and Huahsi

[73] See Chapter 4

Street (Snake Alley Night Market). However, the insertion of a new grand boulevard and riverfront thoroughfare has initiated a change of street pattern in the present-day old districts.

The recently retransformed Chunghua Road is the widest boulevard (77 metre wide) in this district and forms an important edge to demarcate Wanhua District from the special area of Central Government in Chengchung District (Fig.5.22). Its social status, identity, and value have not changed much, even though the revolution of space through the passage of time is significant in the historical process. In the earlier period of the Nationalist government, Chunghua Road was used as a temporary camp for the new arrivals from the Mainland and became a linear market street with a variety of stalls, which were four square metres per unit with only a wooden frame structure and had a total length of 650 metres. Because of its obsolete condition, a new Chunghua Commercial Strip was then constructed in August 1960 to replace those illegal complexes. It was composed of 8 rectangular buildings of 3-storey height with white concrete walls. It included a total number of 1593 units. However, the completion of the new buildings was still short of the number required to house every family. Thus, one family had to share a room of 13 square metres with another family. Chunghua Road became famous in South-east Asian countries for this enormous construction of linear market with a total length of 1200 metres during that period. It was a centre spot of the city with people and activities 24 hours a day. Drinking at Chunghua Commercial Strip and going to movies at Hsimenting were the most fashionable leisure activities at the time. A trip to Chunghua Commercial Strip could not only give you a sense of daily life in the 70s of Hsimenting, but it also recorded the history of Japanese power, the acceptance of the "Han" culture, and the dominant influence of

Fig.5.19: A new refurnished tower stands at a pivotal point of the promenade

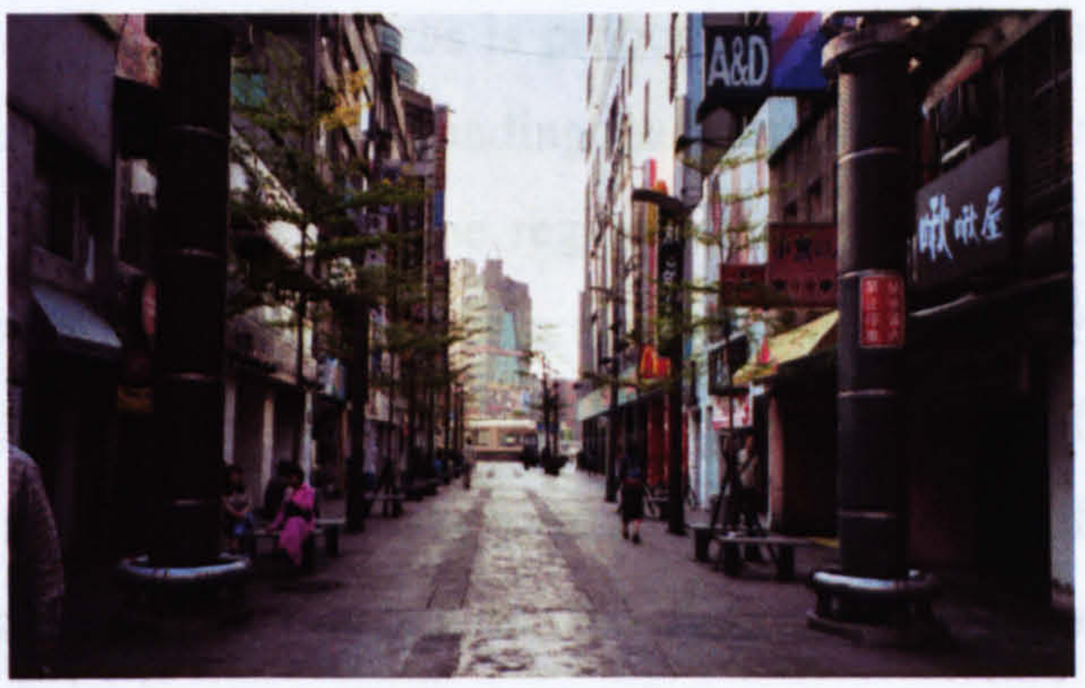


Fig.5.20: Minor greenways penetrating back into the mixed use areas from the main promenade

American culture on this land. Chunghua Road represents the history of Taipei. It recalls a lot of Taipei's memory with historical vestiges such as the North Gate, the City Wall and the back yard of the Presidential Palace. A road collected different layers of memories and it gave a freedom for each individual to project their valuable remembrance back into this road (King & Wang, 2001:105-113; and Tseng, 1994:141-143).

The present-day Chunghua Road has been transformed into a shady promenade lushly planted with green shade trees. From this main promenade, minor greenways penetrating back into the mixed use areas linked with established community institutions such as Red House Theater, Chungshan Assembly Hall. At a pivotal point of the promenade, a tower with its own front plaza is proposed as a new landmark and also as a gateway to the area (Fig.5.19 and Fig.5.20). This new boulevard acts as public open space for the democratic use of every citizen and exists as a landscaped pedestrian way which leads to and from important local institutions and landmarks which act as focal points in the system. The reestablishment of Chunghua Road as "promenade" thus affords a breathing space for the crowds of pedestrian in the surrounding dense complexes.

- **Square and Plaza**

Fig.5.21 An isolated civic plaza locates at major front part of Taipei Railway Terminal Station

For functionality, the front plaza of Taipei Railway Terminal Station and the Presidential Plaza are the two large civic public open space located at significant positions in the old Western zone. The scale of these two plazas is proportionately large in contrast with the surrounding backdrops, but they seem lifeless and have no regard for the public use of, or involvement with, the spaces. The Presidential Plaza is an example of a place occasionally used for Double Ten National celebration or military tattoo on a few special days, but most of the time it is like a desert with a sense of tight security control. As a result it becomes out of touch with the public. They just become two isolated islands which are the obvious result of a low degree of permeability in a network of open space. The isolated property of these civic plazas causes an unfriendly accessibility for the public instead of serving as spaces for

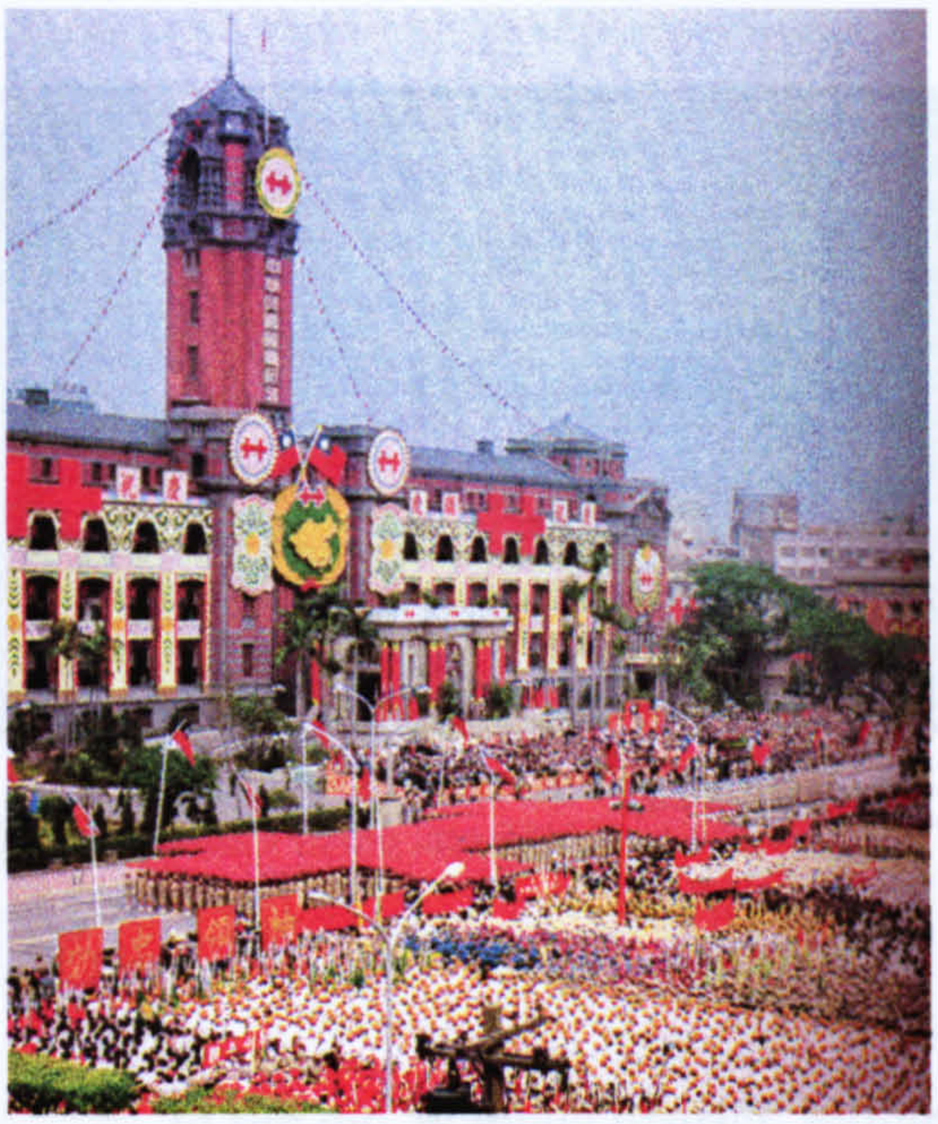


Fig.5.22a: The Presidential Plaza is only a place for the public at a few special occasional days. (Source: *A Pictorial Narrative of Republic of China*, Bureau of Information, Taiwan, 1972: 397)

Fig.5.22b: The public demonstration in front of the House of Presidential square. (Source: www.chinatimes.com.tw , March 11, 2004.)

Fig.5.23 Shinkwong commercial plaza --- a gathering place for pedestrian

relaxation and places for enjoying the bustle and excitement of the crowd except special occasions (Fig.5.21, Fig.5.22a and Fig.5.22b). On the contrary, the small-scale commercial plaza in the district interlocking with narrow street space generates a dynamic function and provides a more lively picture with public gatherings and celebration.

The plaza in front of Shin Kong Tower is an obvious example of an urban public space for the citizens, which attracts strong vibrant everyday life activities from the local and the regional areas. It extends the economic centre of gravity from the old downtown into what had been a dynamic but rather dowdy and deteriorating residential area in the backyard. Even though the scale of this plaza is small, its multi-functional role as a temporary place for political demonstration, merchandise trading, fair show, relaxation and meeting has clearly made a prominent node of the old area. With its great intensity of social activity it is a pivot point for people with clear visual orientation (Fig.5.23). Besides, the transformation of the mal-functional public plaza into a recreational plaza in the old area not only provides ample open space for local people but also serves the region. One successful example is the plaza of Chungshan Assembly Hall. In the old days, it was a place for public assembly but later became a parking lot for the police headquarters. In the late 1990s, it was successfully transformed from a parking space into a multi-functional urban plaza with permeability and public access (Fig.5.24a, b and c).

Fig.5.24a: The plaza was a parking lot before the redevelopment in the late 90s.

Fig.5.24b: A historical scene of public assembly in 1945 at the plaza in front of Chungshan Assembly Hall. (Source: A Pictorial Narrative of Republic of China, Bureau of Information, Taiwan, 1972.)

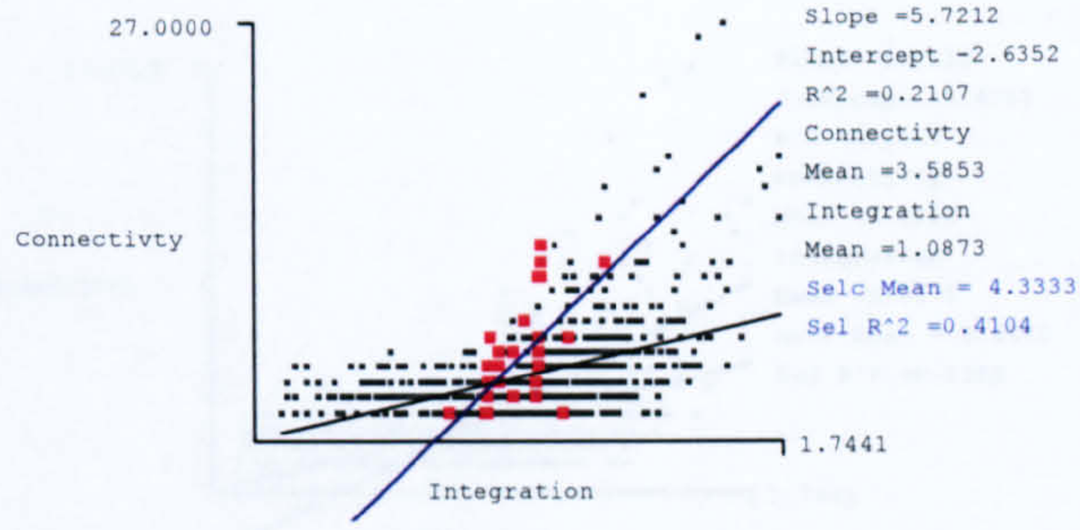
In the old Wanhua district, religious squares relatively out-number other types of plazas and squares. Most religious squares have historically co-existed with numerous temples in the old areas. A religious square is a small pocket of open space and an ante-plaza for a temple. Its scale is relatively small in comparison with the former types of plazas. The temple space is a central space par excellence, which served as a place of social encounter and ceremonial functions in the past and it still maintains the same functions in some of the historical temple squares today, such as Lung Shan Temple square and Ch'ing-Shui Tsu-shih-kung *miao ch'eng,* which are the places embedded with strong local character and provide vibrant activities for the communities (Fig.5.25).

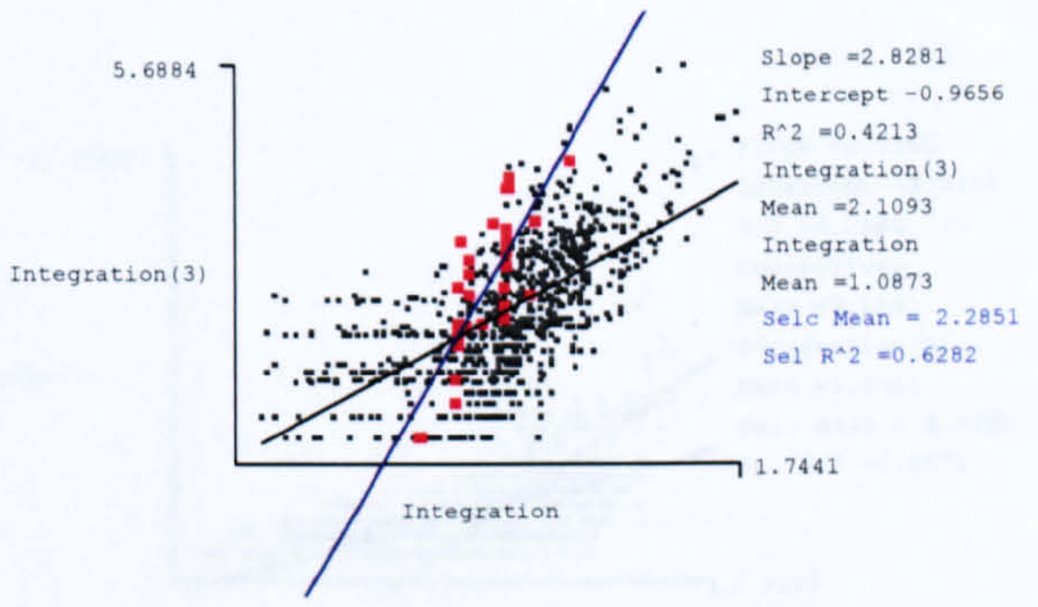
Fig.5.24c: The plaza becomes a gathering place for public social activities such as outdoor performance

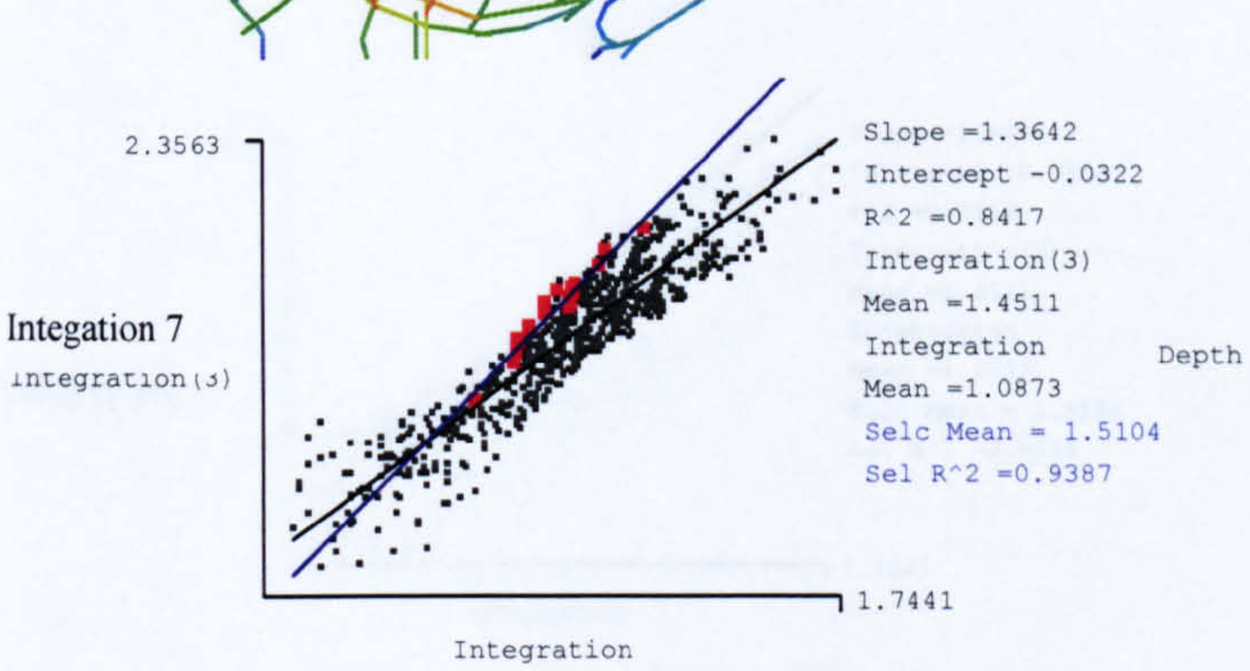
Fig.5.25: The present *miao-ch'eng* at Lungshan Temple

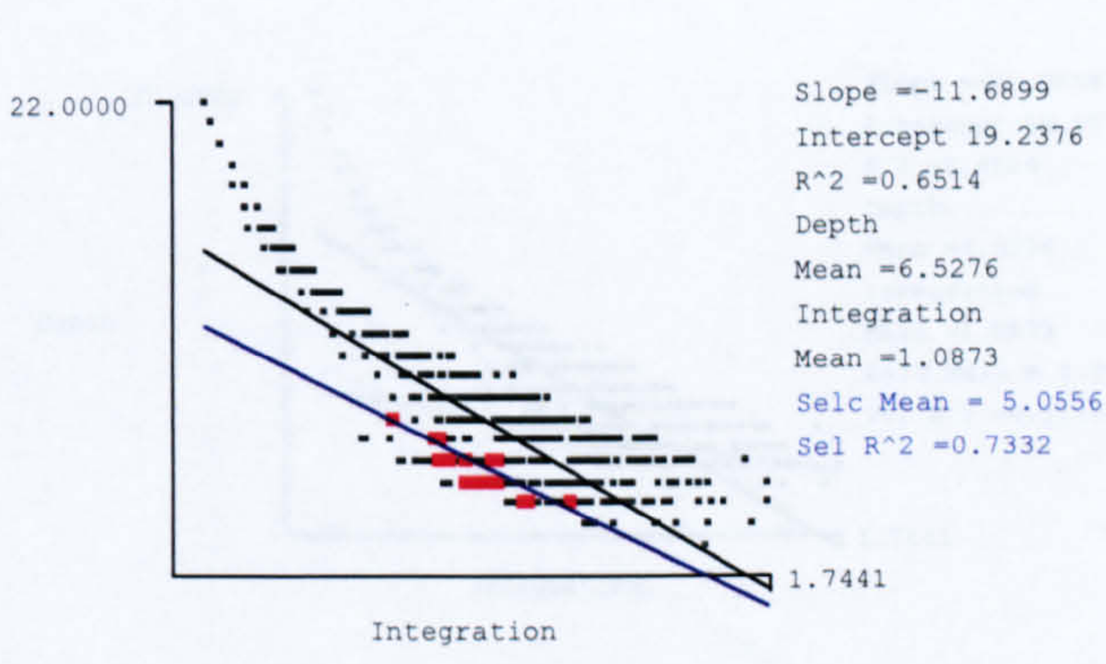
Hsimenting Pedestrian Streets

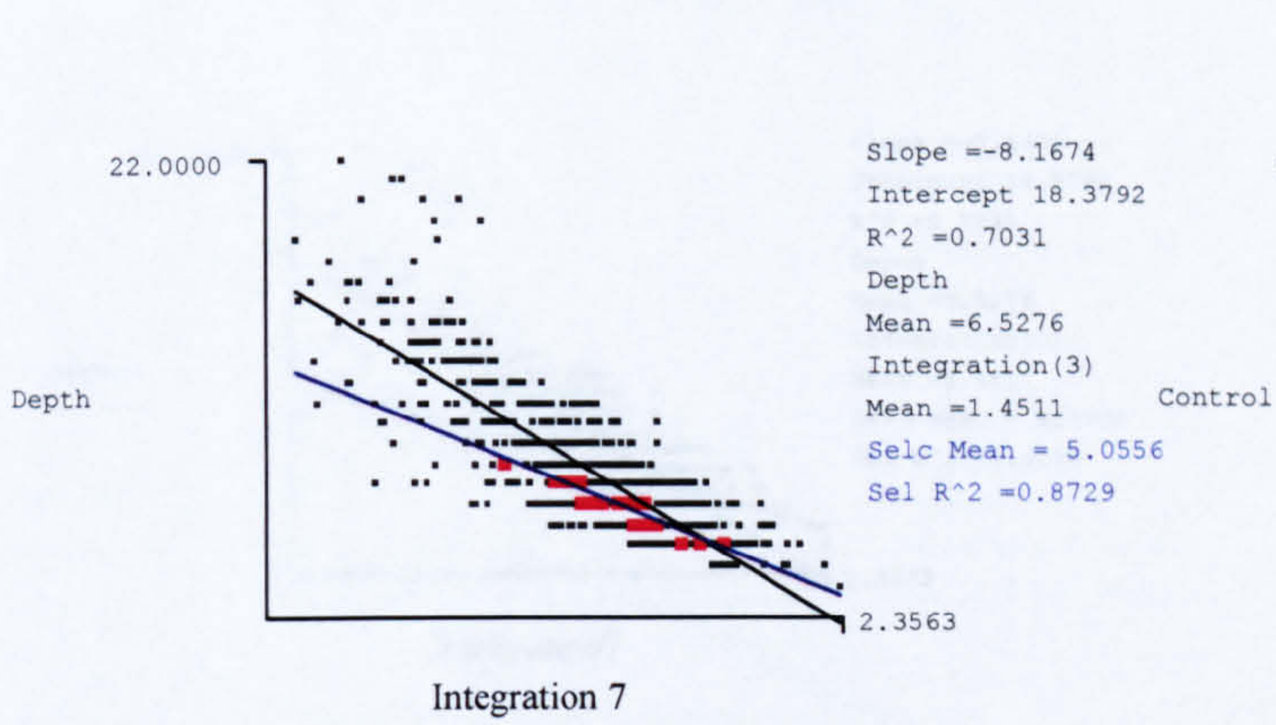
Note: The red/dark dots represent the lines in Hsimenting pedestrian streets











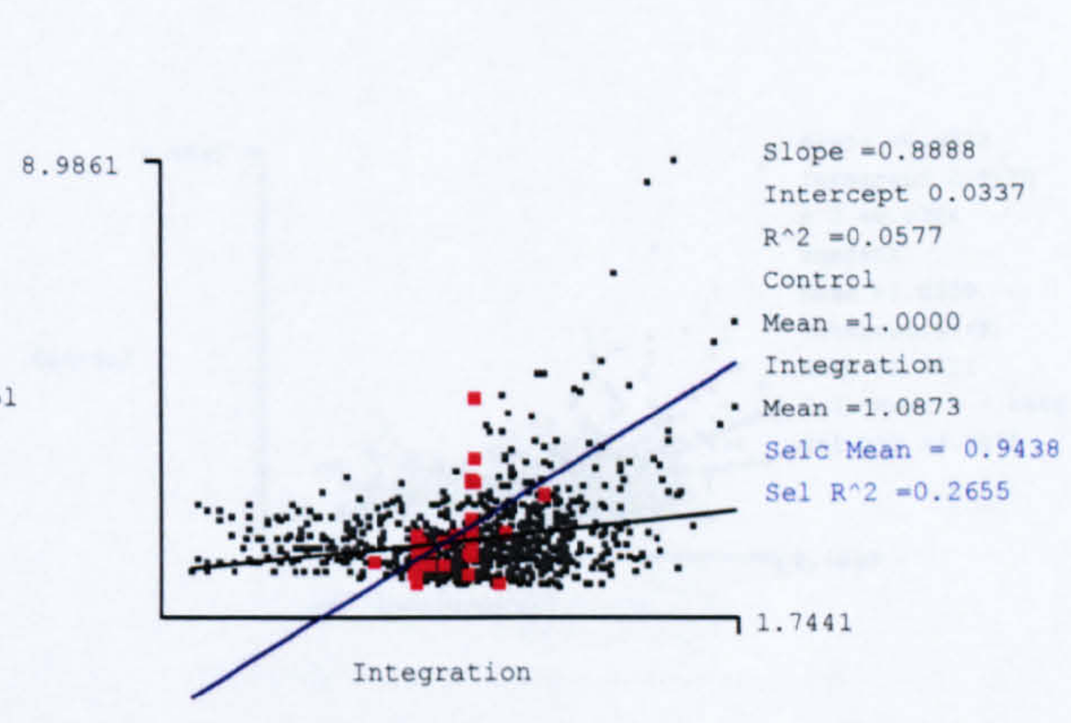
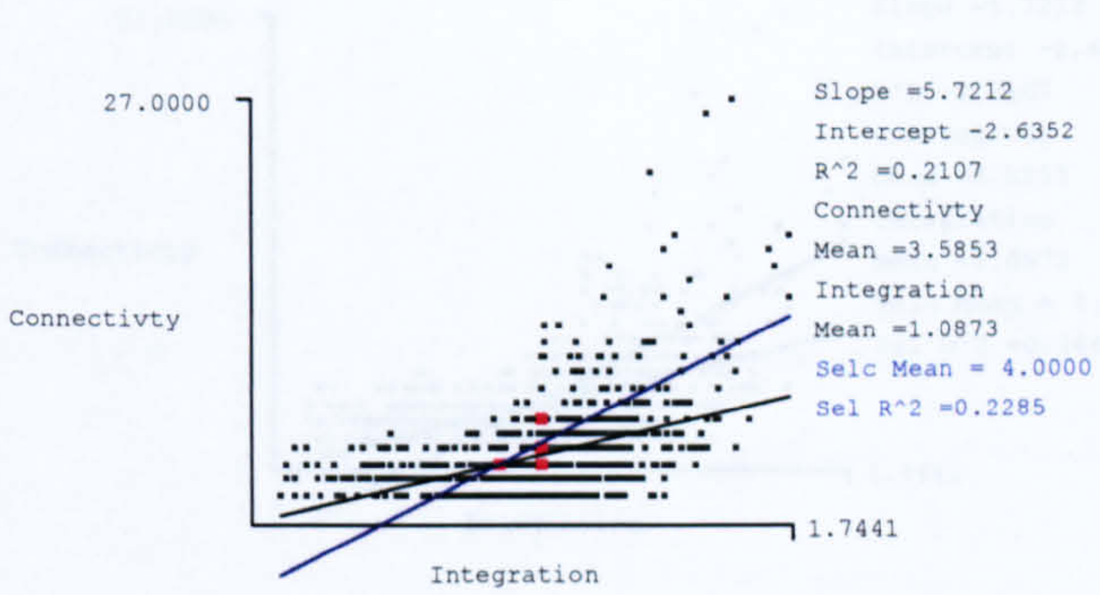
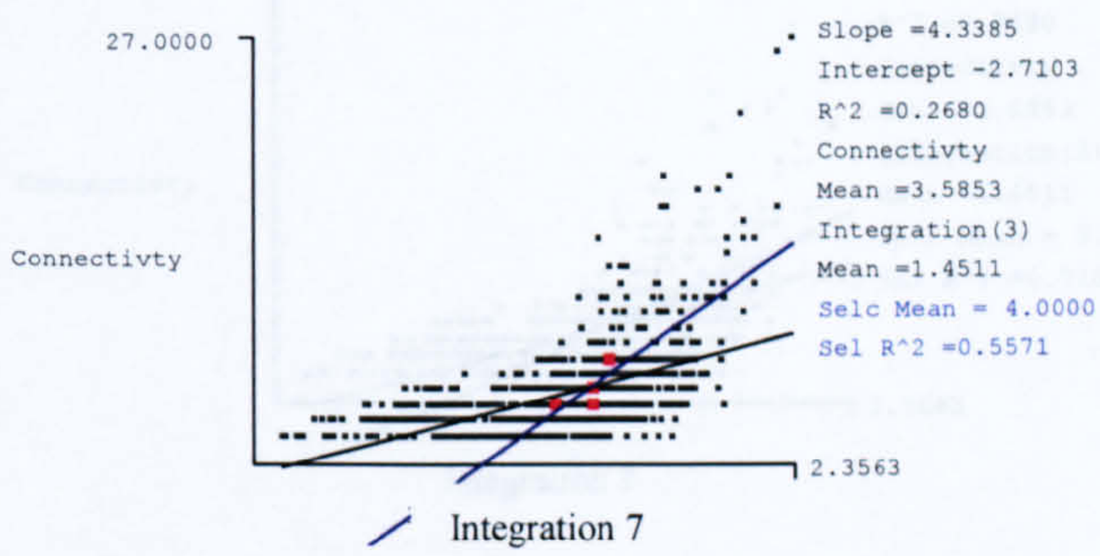
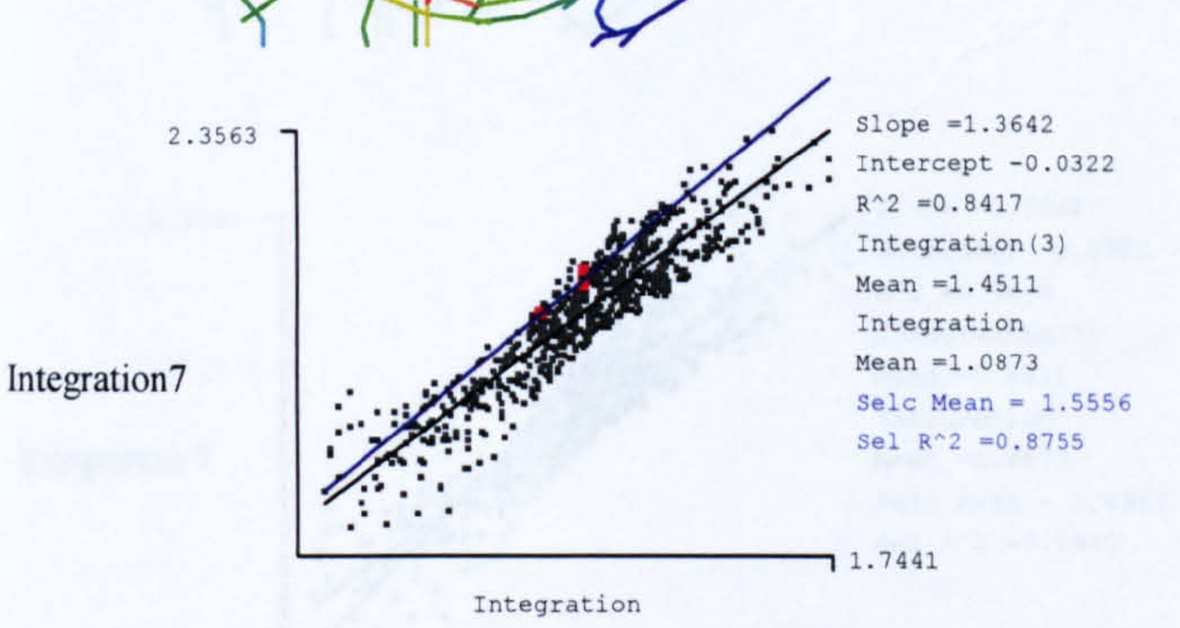


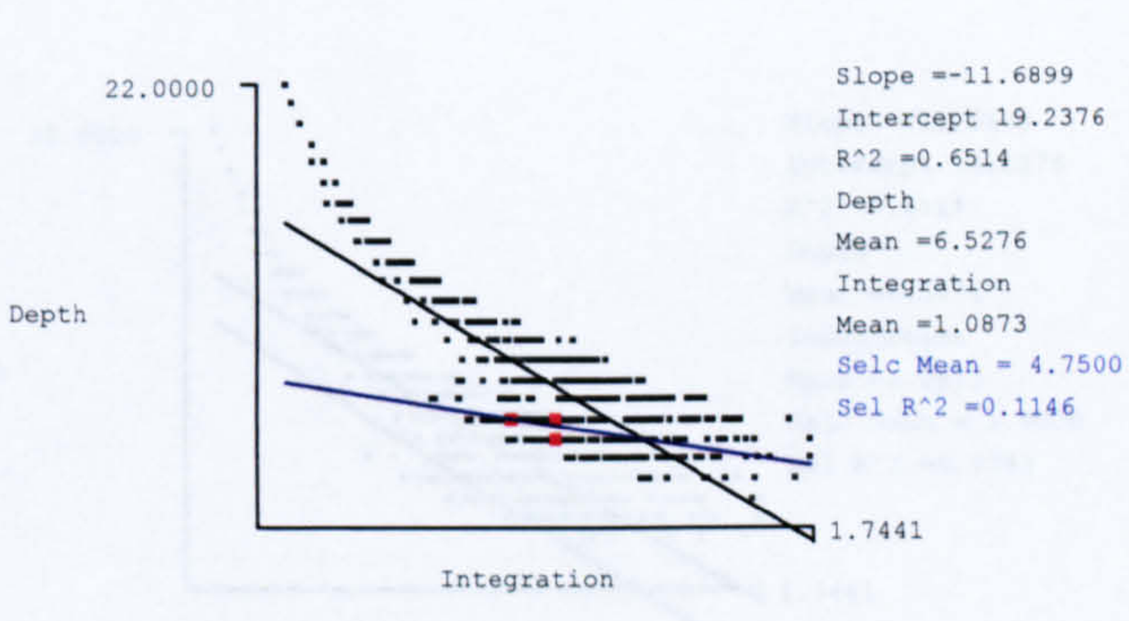
Fig.5.26: Scattergrams of Hsimenting within the context of Wanhua

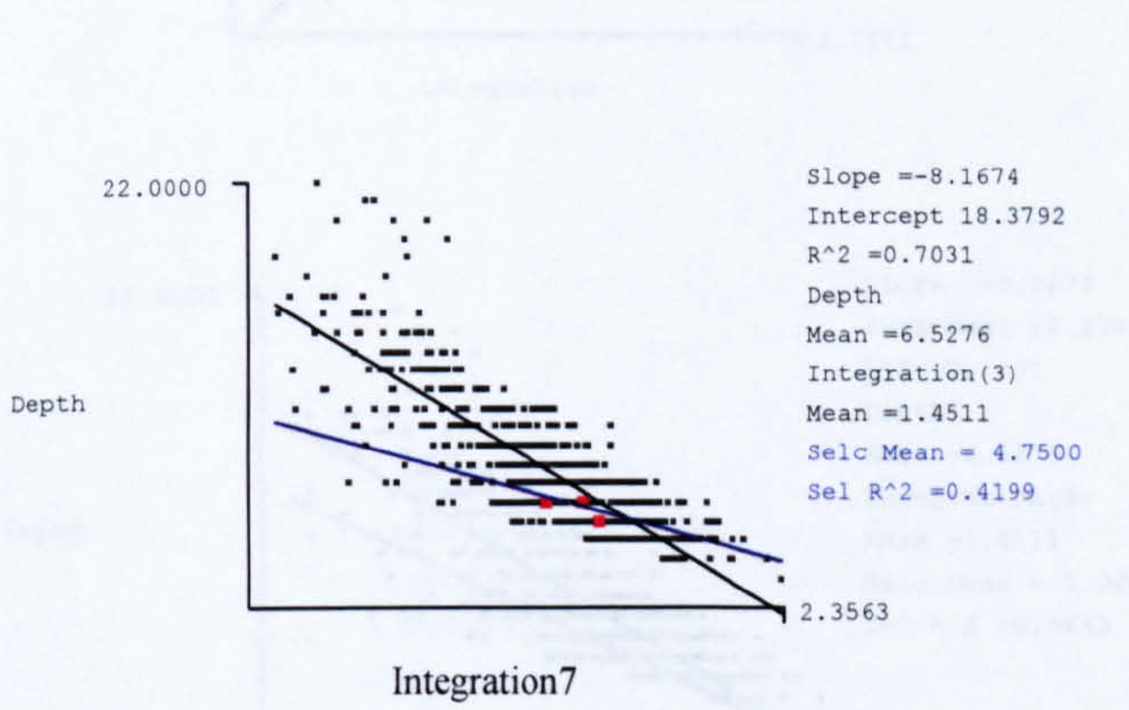
Hsimen circle plaza











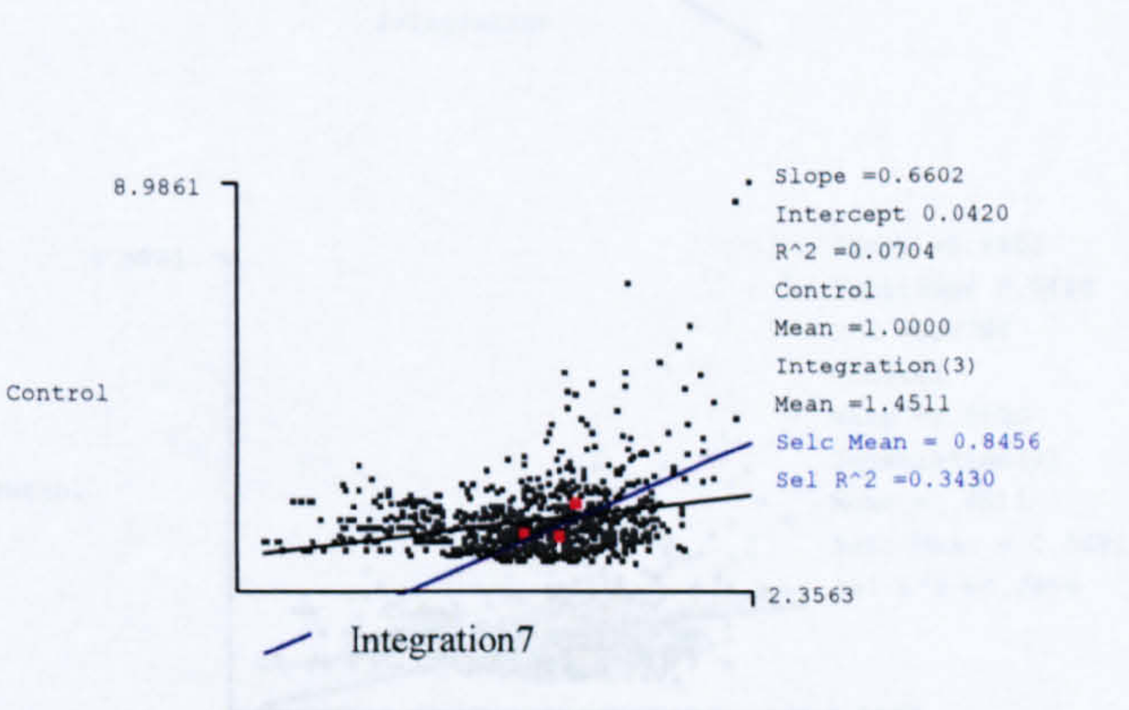
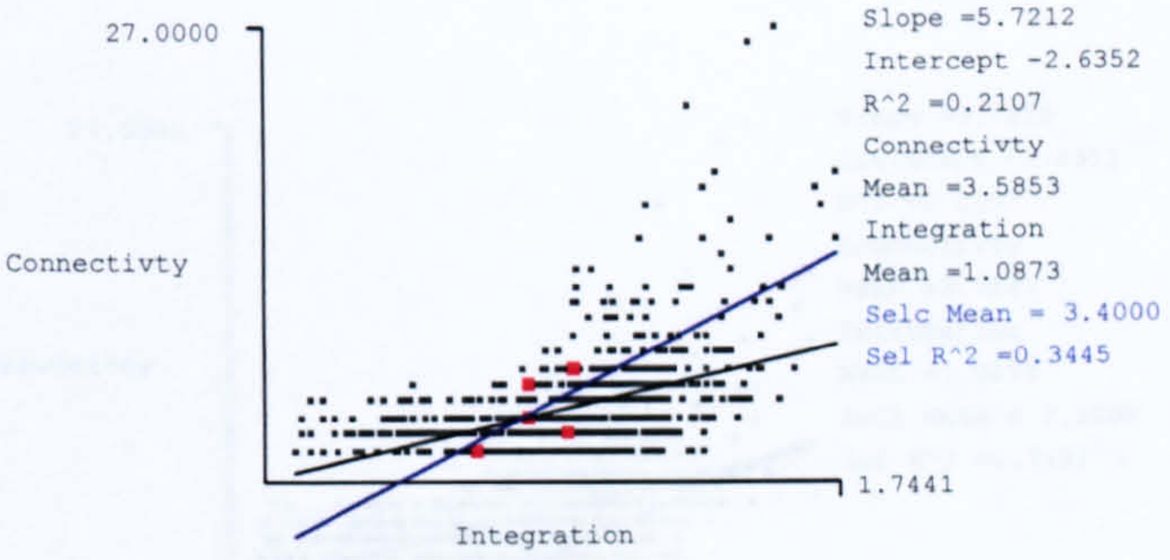
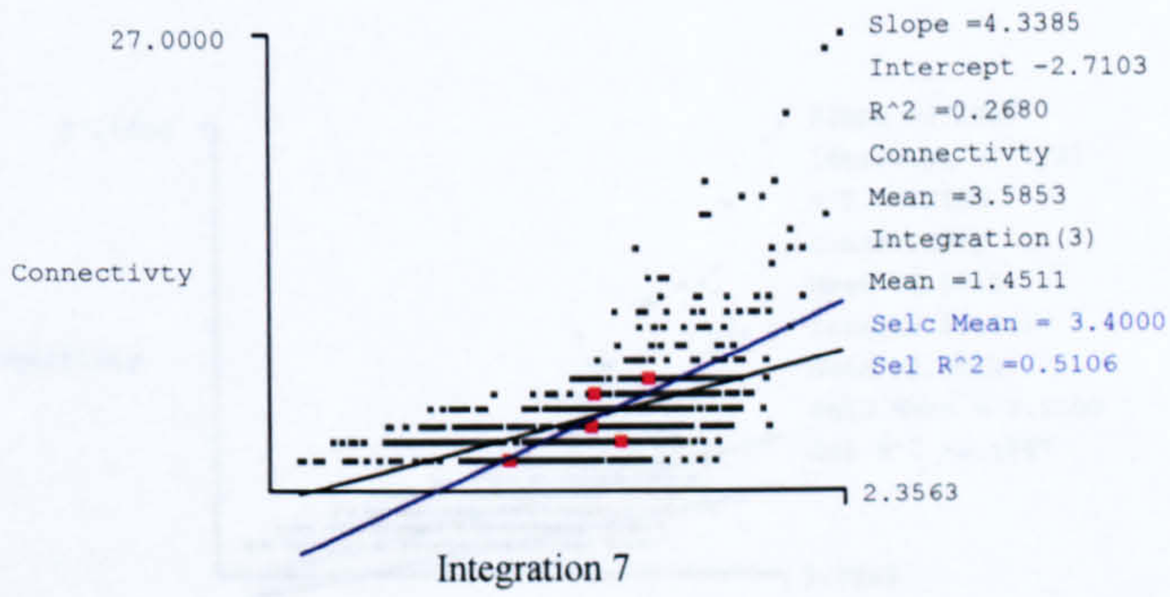
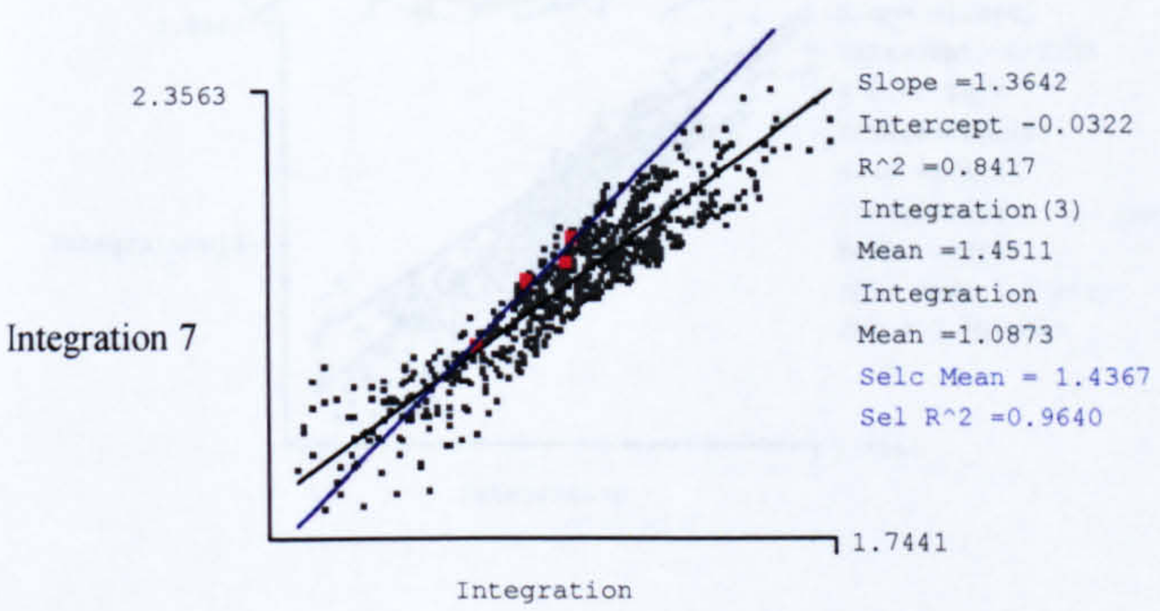


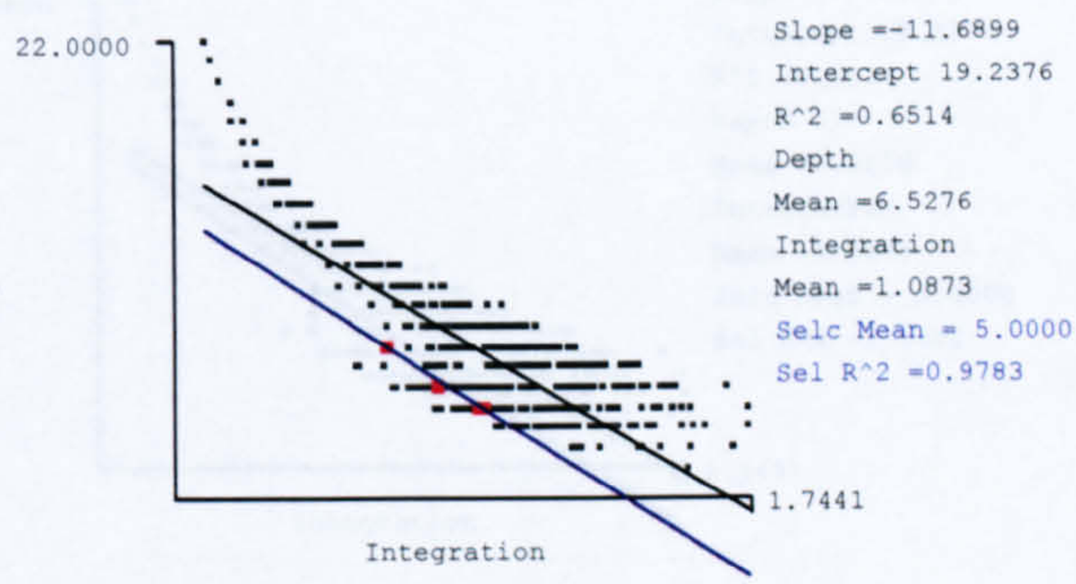
Fig.5.27: Scattergrams of Hsimen Circle Plaza within the context of Wanhua

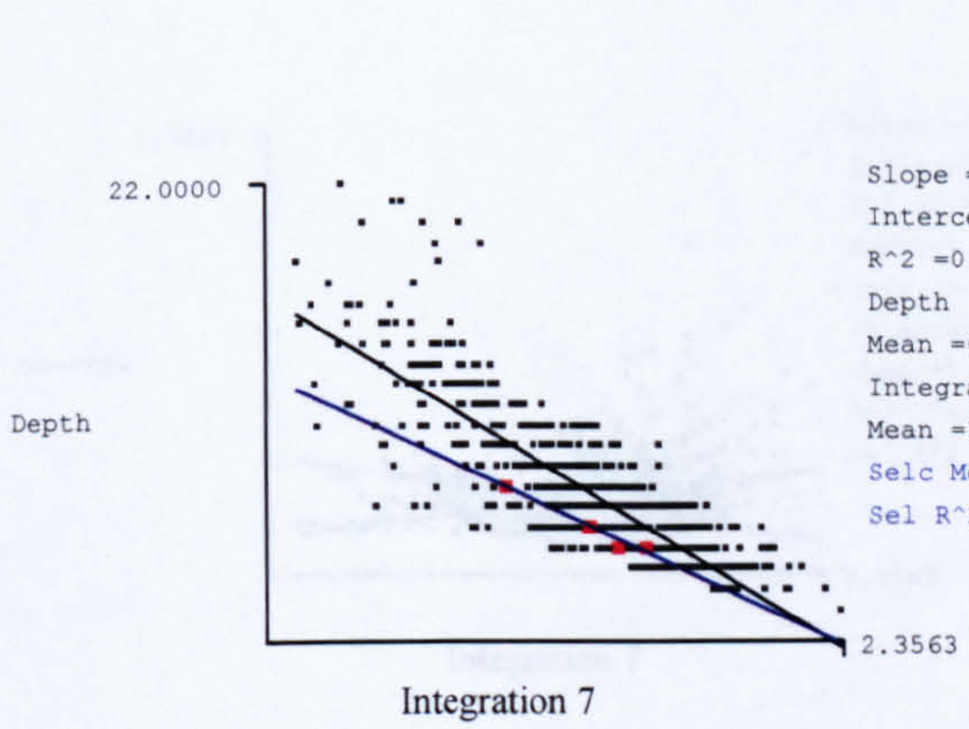
Hsimen Market and Red House theatre











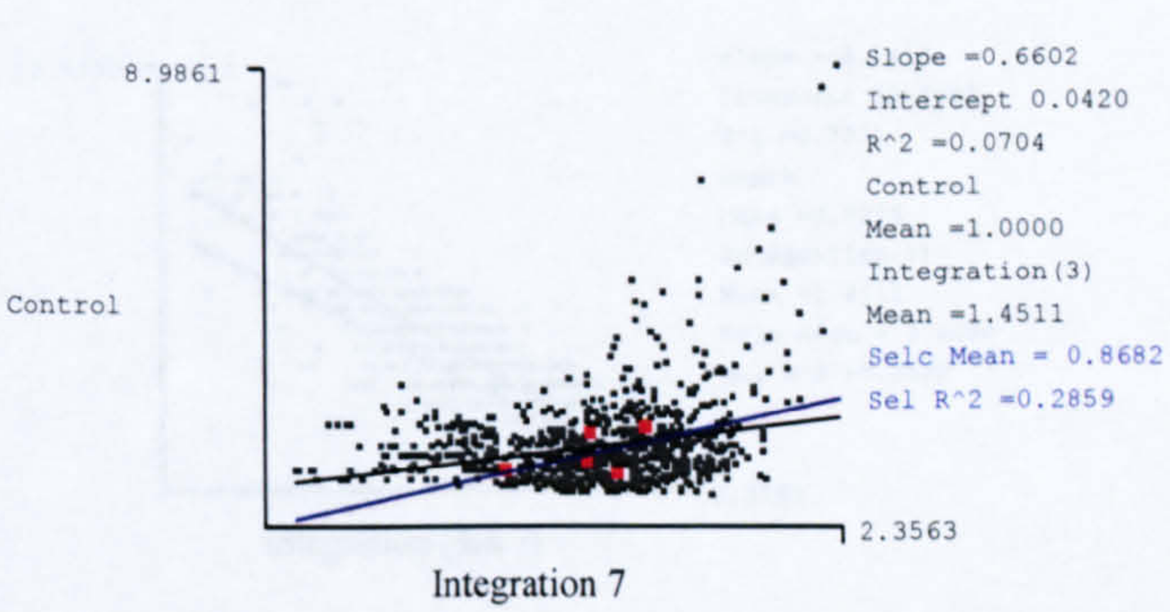
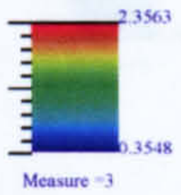
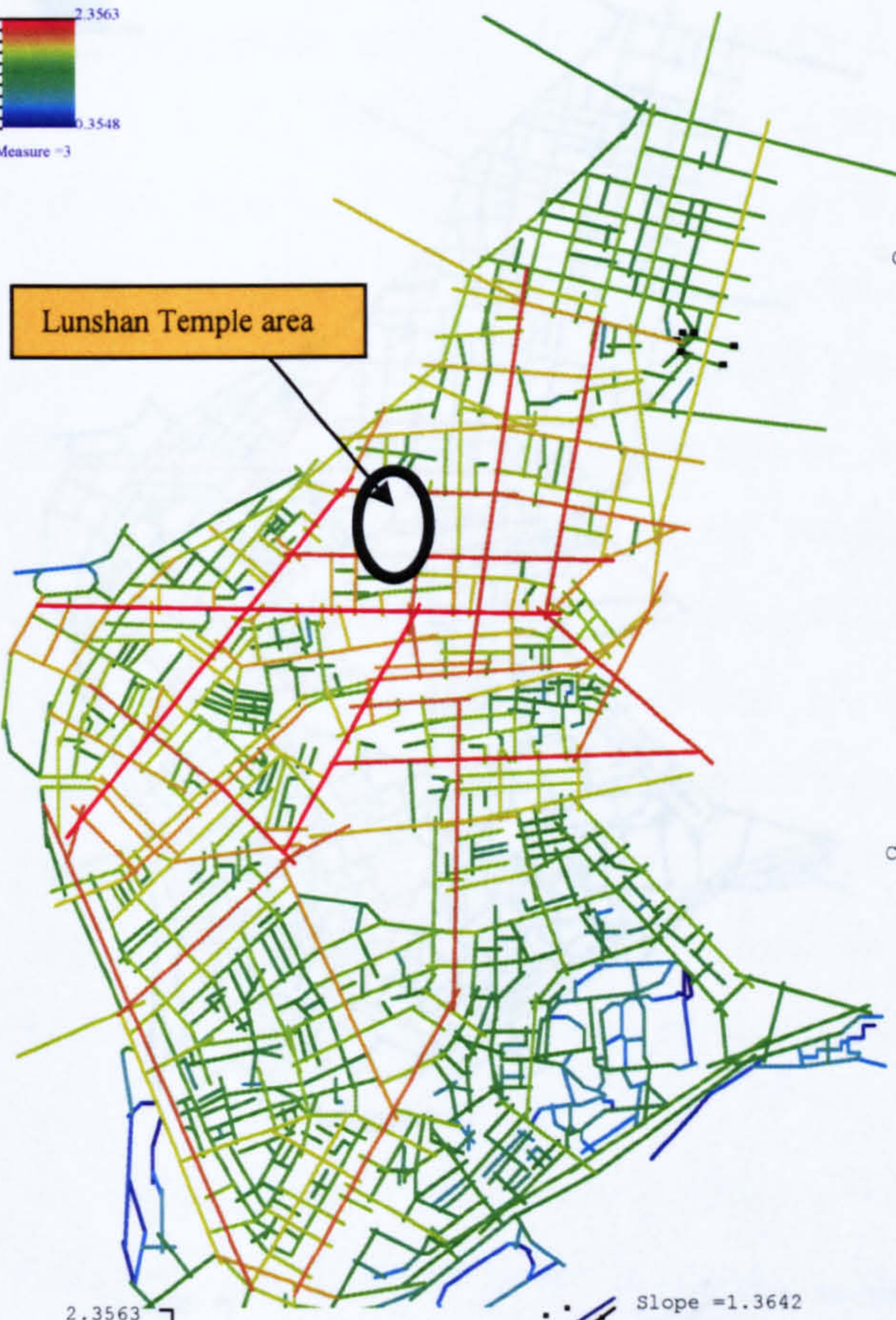
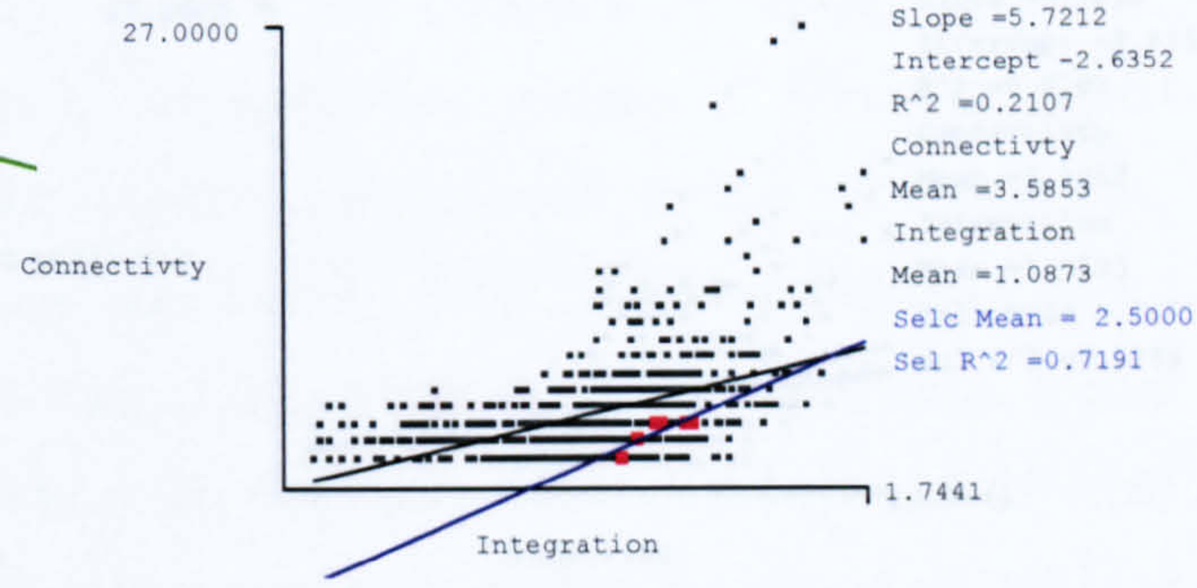


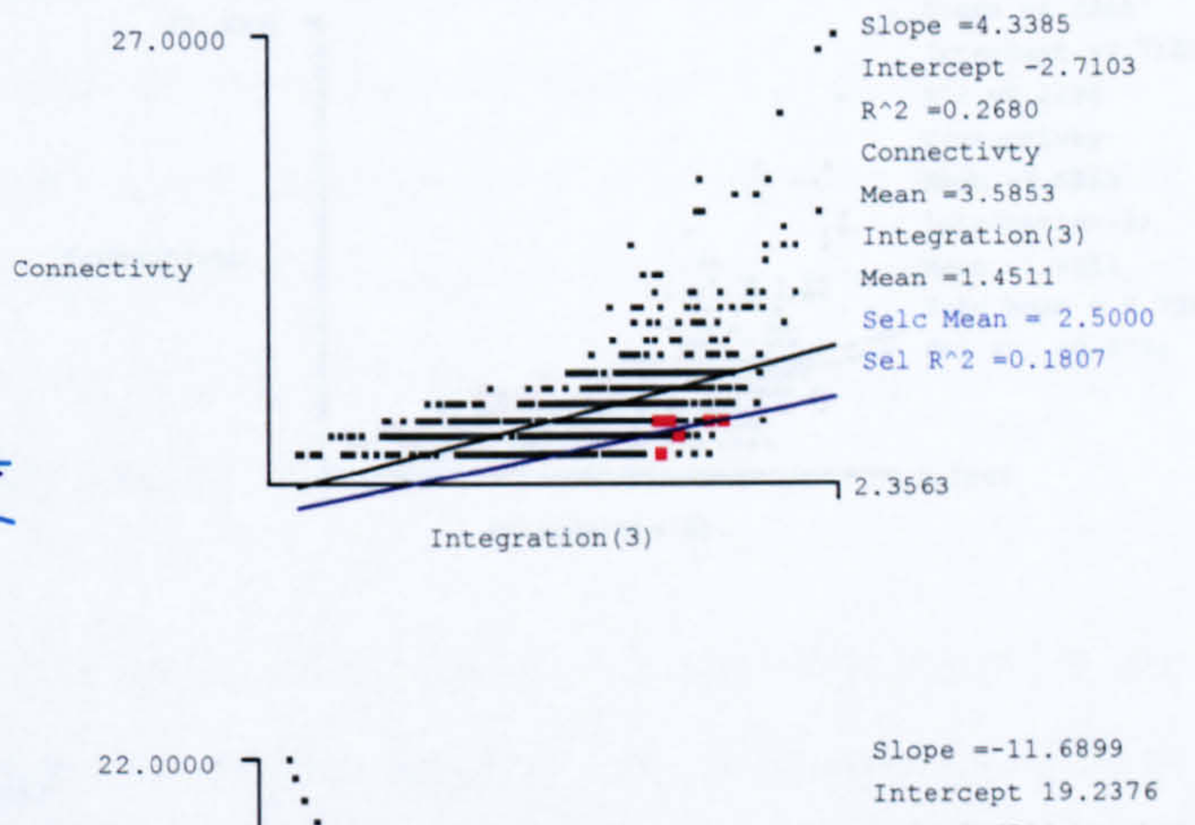
Fig.5.28: Scattergrams of Hsimen Market and Red House Theatre within the context of Wanhua

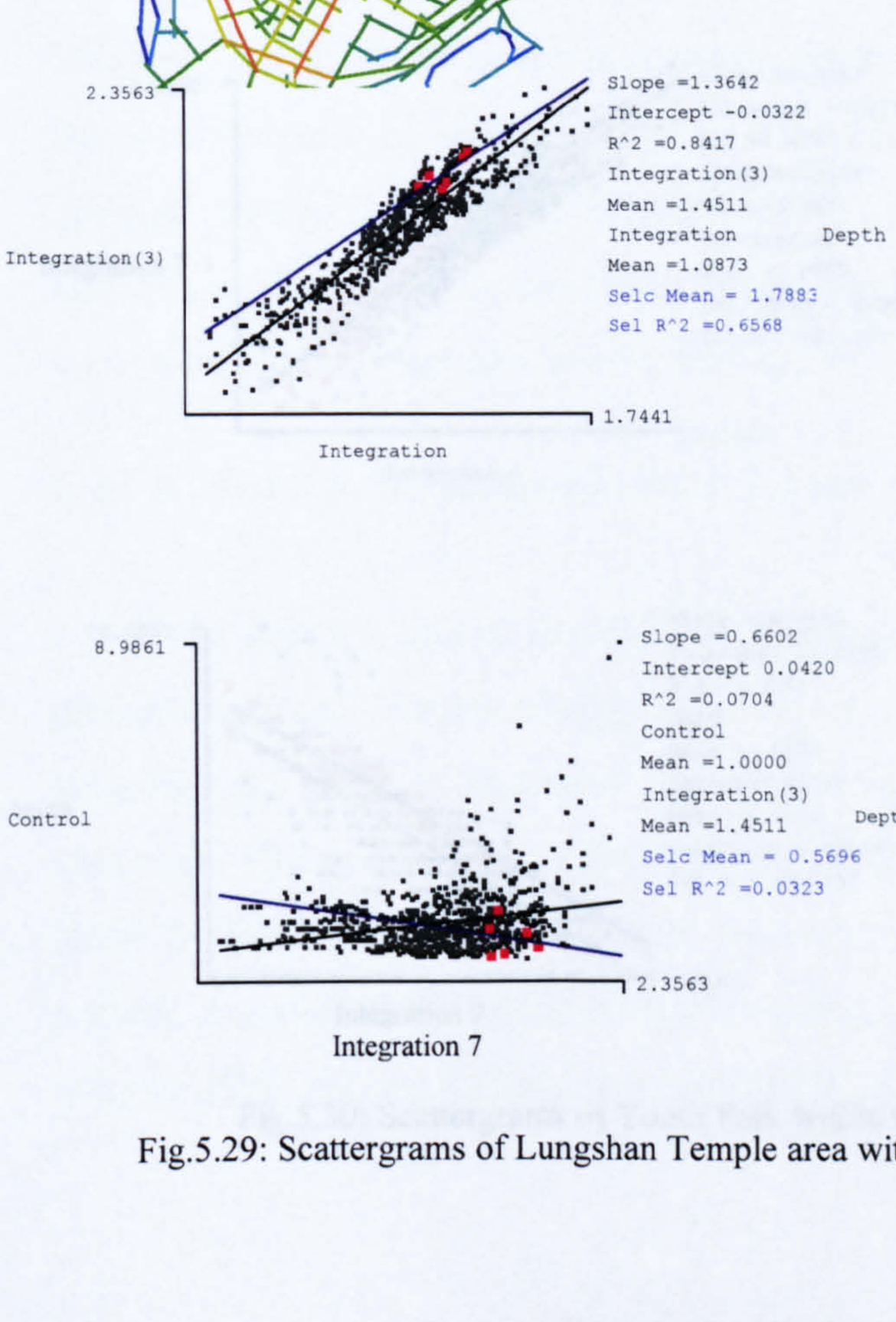
Lungshan Temple area











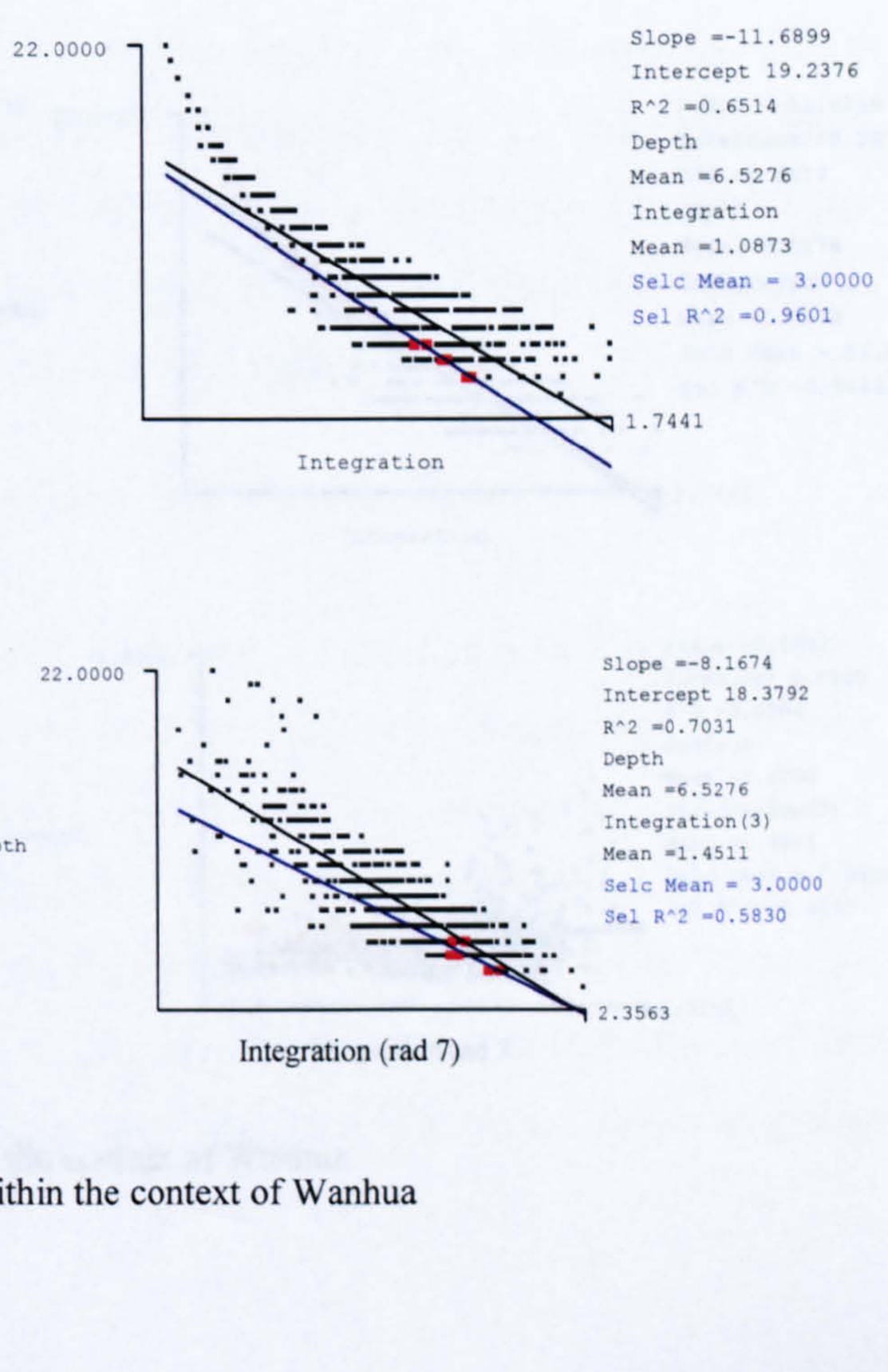
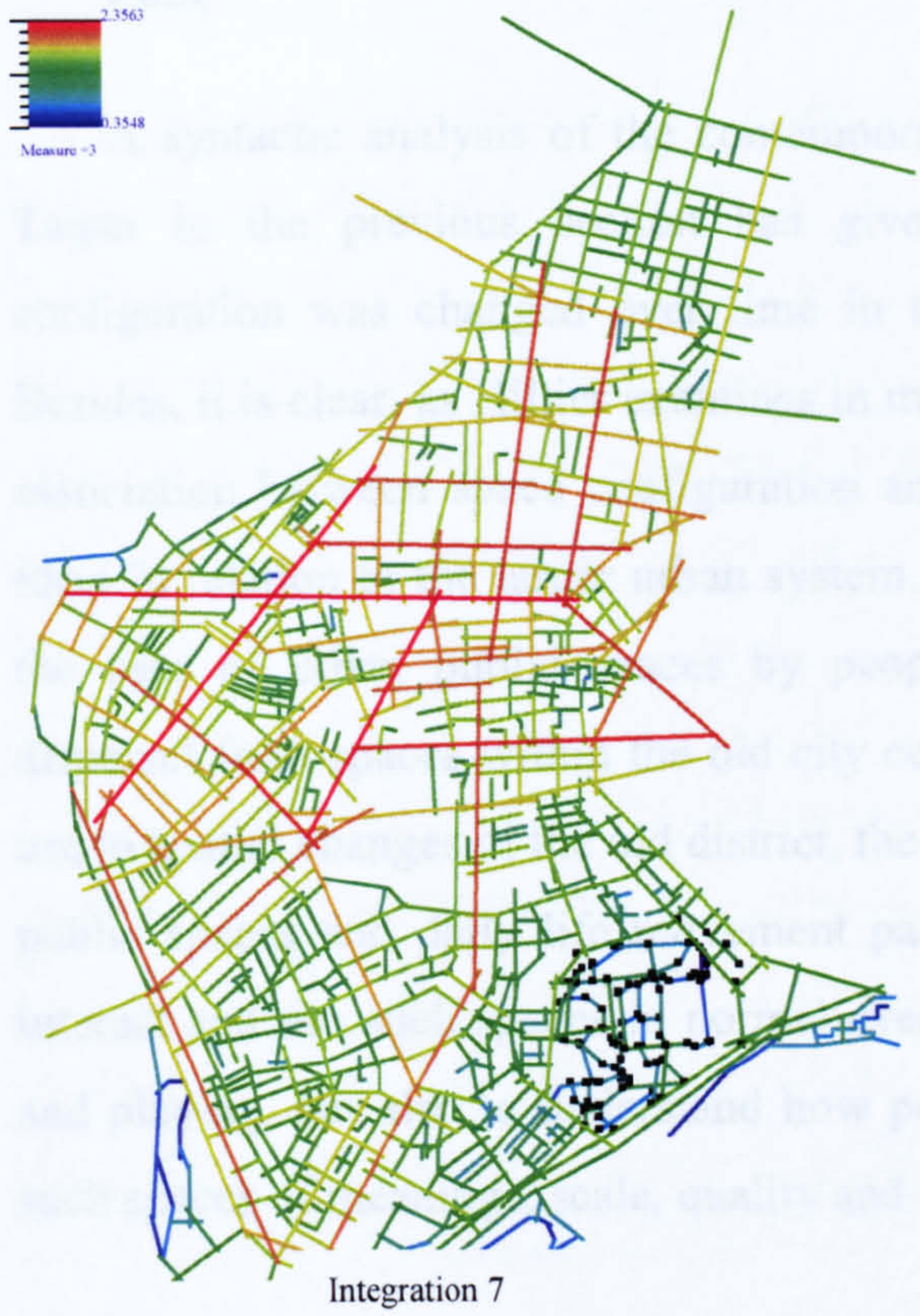
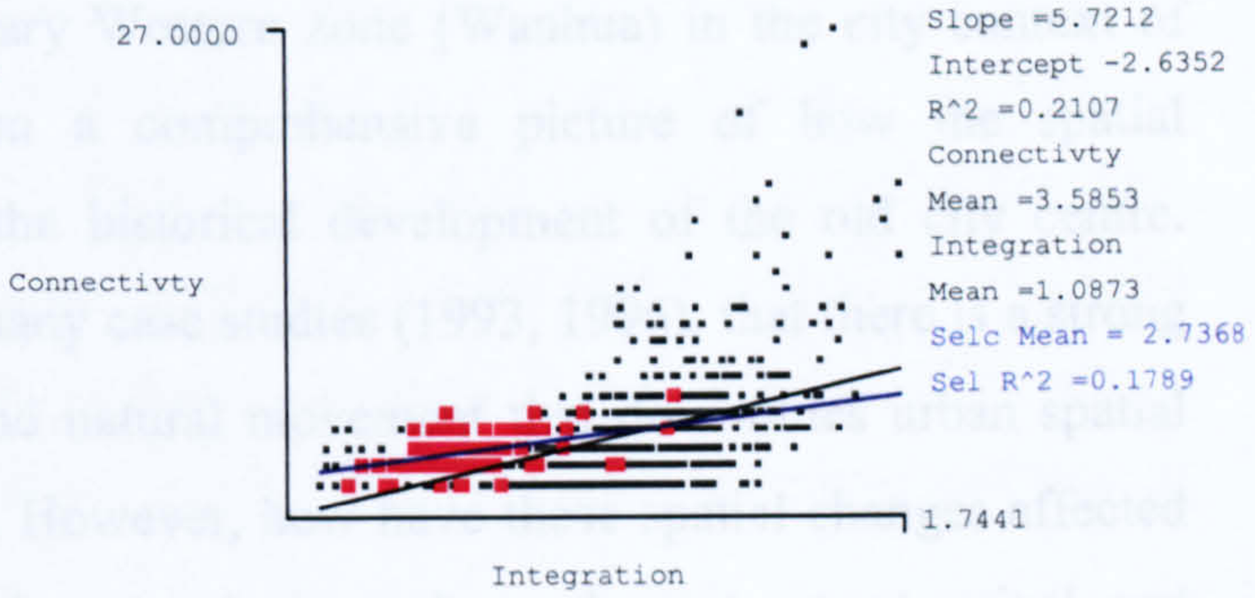
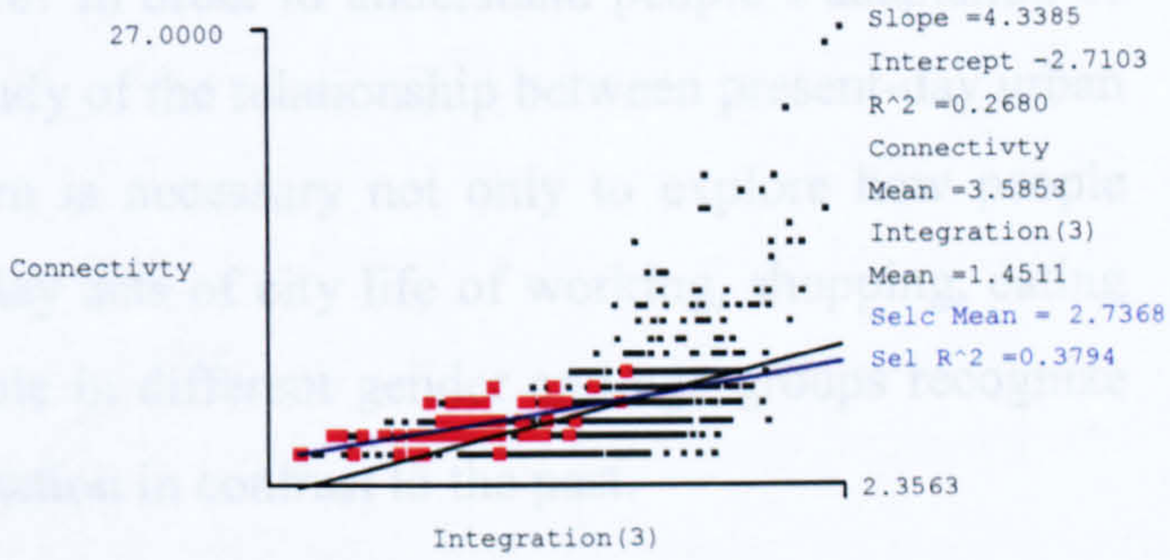


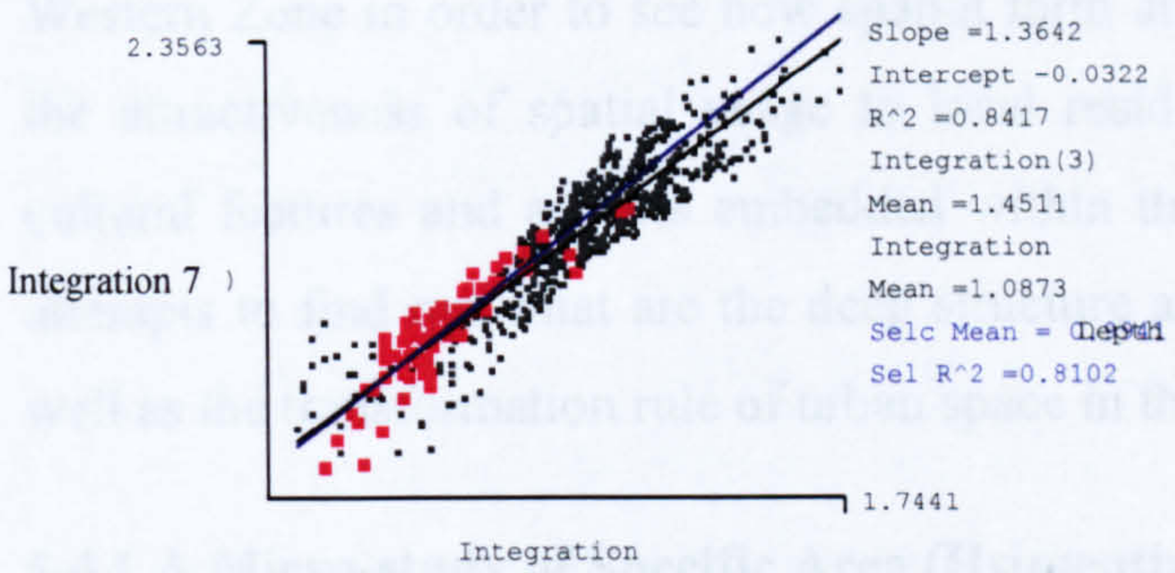
Fig.5.29: Scattergrams of Lungshan Temple area within the context of Wanhua

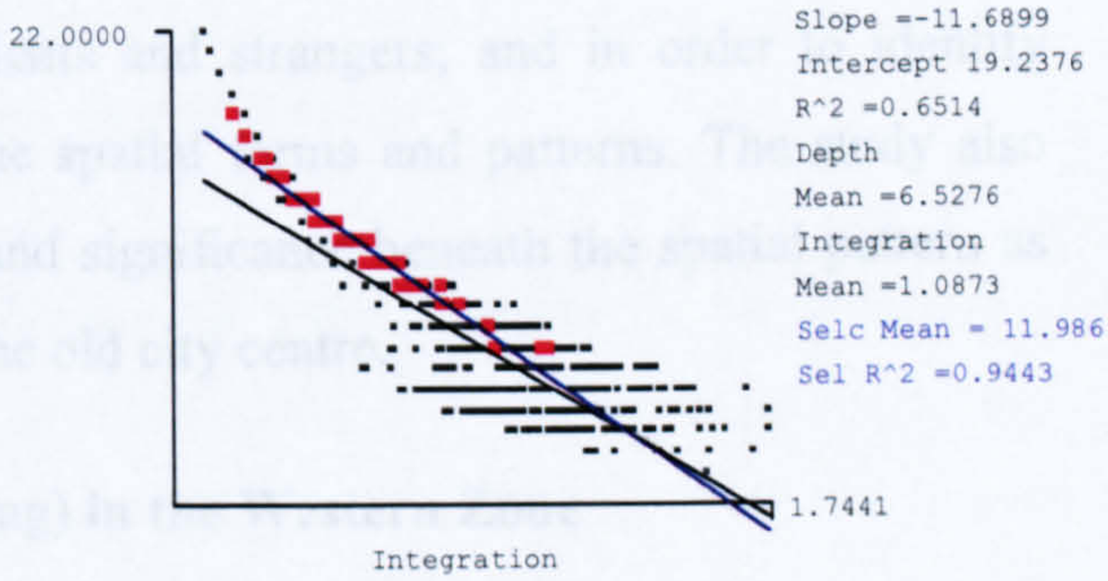
Youth Park

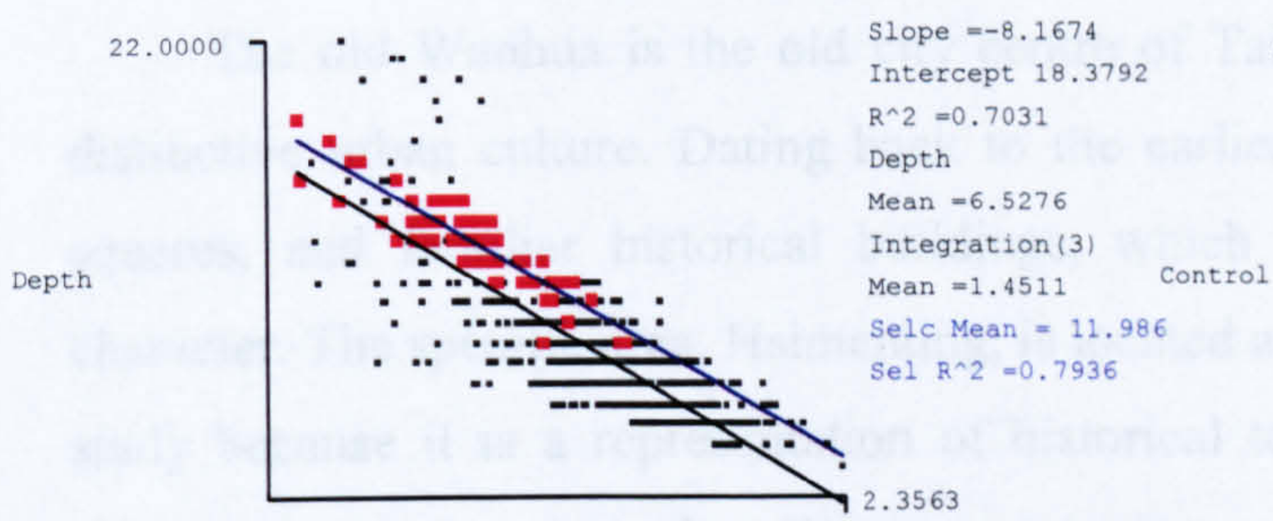












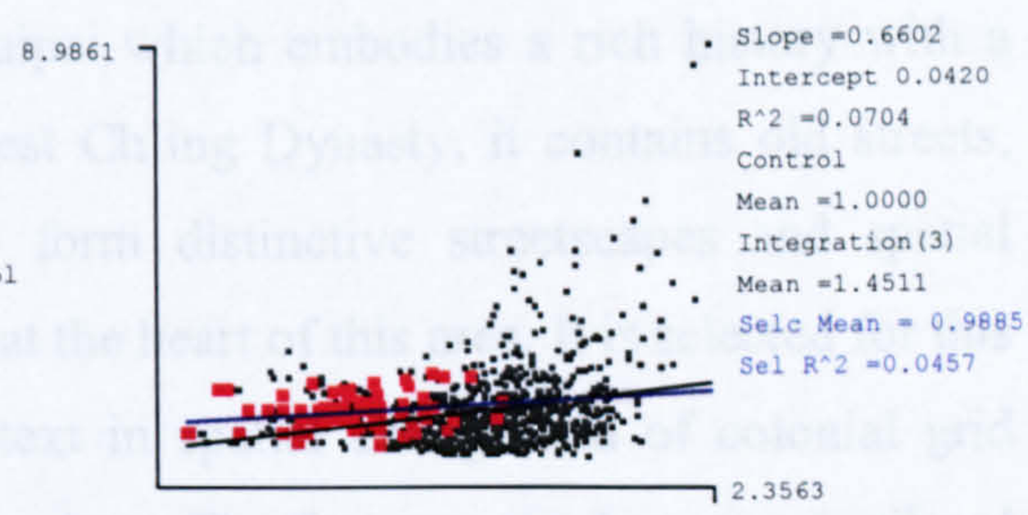


Fig.5.30: Scattergrams of Youth Park within the context of Wanhua

5.4 A Critical Reading of Present-state Socio-cultural Form of Space in the Old Western Zone

A syntactic analysis of the contemporary Western zone (Wanhua) in the city context of Taipei in the previous section has given a comprehensive picture of how the spatial configuration was changed over time in the historical development of the old city centre. Besides, it is clear, as Hillier examines in many case studies (1993, 1996), that there is a strong association between space configuration and natural movement that determines urban spatial form in relation to the larger urban system. However, how have these spatial changes affected the uses of urban public spaces by people nowadays, such as the movement-arrival and dispersal from spaces within the old city centre? In order to understand people's adaptation of use to spatial changes of the old district, the study of the relationship between present-day urban public spaces and daily life movement pattern is necessary not only to explore how people interact and use such spaces in normal everyday acts of city life of working, shopping, eating and playing, but also to understand how people in different gender and age groups recognize such spaces of meanings, scale, quality and function in contrast to the past.

In so doing, this section includes a micro-study of a specific area (Hsimenting) in the Western Zone in order to see how spatial form and pattern adapts to social change and affects the attractiveness of spatial usage to local residents and strangers; and in order to identify cultural features and aspects embedded within the spatial forms and patterns. The study also attempts to find out what are the deep structure and significance beneath the spatial pattern as well as the transformation rule of urban space in the old city centre.

5.4.1 A Micro-study of Specific Area (Hsimenting) in the Western Zone

The old Wanhua is the old city centre of Taipei which embodies a rich history with a distinctive urban culture. Dating back to the earliest Ch'ing Dynasty, it contains old streets, squares, and familiar historical buildings, which form distinctive streetscapes and spatial character. The specific area, Hsimenting, is located at the heart of this area. It is selected for this study because it is a representation of historical text in spatial change and of colonial grid pattern. A survey was conducted at two separate occasions. The first one was between April and May in 1999; the second one was in March 2002. It is understood that 'urban space at ground

level cannot be seen and experienced all at once, but requires the observer to move around the system building up a picture of it piece by piece. And that is the way to look at a picture of the whole urban system and get the overall sense of urban intelligibility' (Hillier, 1996:129). An observational procedure was carried out in order to obtain accurate data and appropriate information, which could be used for analysis at a later stage. In keeping with previous experience from Space Syntax studies, the 'Gate' method of observation was used to obtain the movement data for this study. All pedestrians crossing a notional gate designated in the survey area were counted perpendicular to the observer's line of sight. These data were gathered at different times of day.

In this study, the duration of observation for each gate was two and a half minutes for each period. The whole observation was divided into five periods: 8 – 10 a.m., 10 – 12 noon, 12 noon – 14 p.m., 14 – 16 p.m. and 16 – 18 p.m., giving a total time of 12.5 minutes for each gate observation (See Appendix 1, Table 5A-1). Nineteen notional gates were designated for observation of movement patterns as in Fig.5.31. The designation of these gates had to satisfy two principles. 1) The gates should cover, not all streets, but at least all primary streets in the survey area that spread through streets with high land price as well as low land price. 2) The gates were chosen at some specific points of urban public space, such as commercial plaza, temple square and boulevards, and also were selected within both the integrated area and the segregated area of Hsimen quarter based on previous spatial analysis.

A study of urban public spaces at these selected gates provides a comprehensive understanding of the old district. Observation and survey of the selected specific area was recorded at a number of 'gate' locations allocated according to different types of streets and different land uses. In fact, the choice of gates covered a variety of spatial functions and characters in and around the area of the study that is aimed at giving a holistic view and representation of the whole area.

Only moving pedestrians were observed and counted at each gate. Four major groups were selected for study: adult male, adult female, teenagers, and children, the last being estimated as being 12 years of age or less. The correlation between the variables, such as integration, connectivity and depth, and daily movement patterns of different gender and age

groups in particular spaces have helped to micro-analyse the spatial character, intelligibility, functionality, and identity of such socio-cultural spaces in the old district.

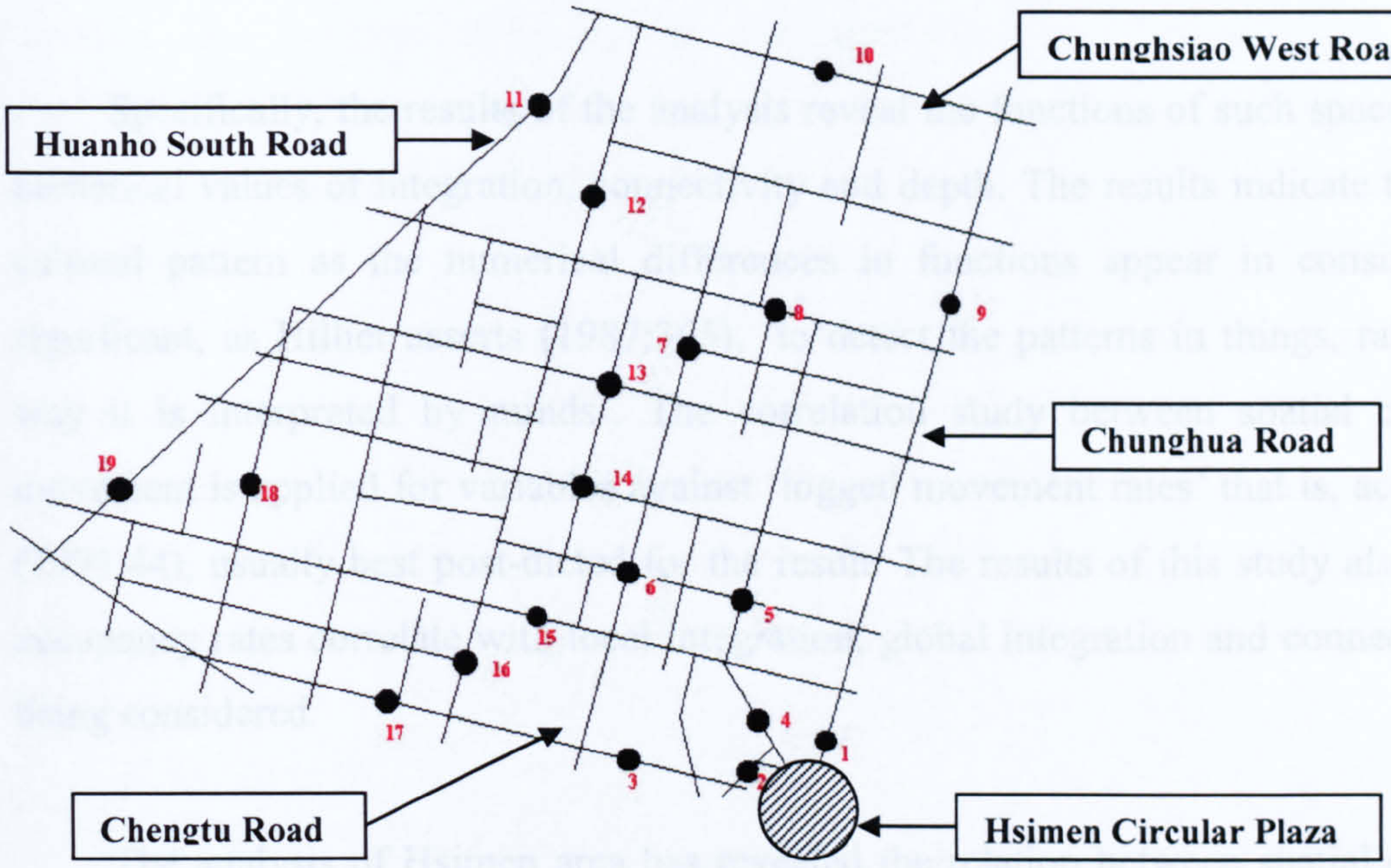


Fig.5.31: Location of gate numbers in the survey area

5.4.2 Pattern of Interaction in the Old City Centre

From the study in previous chapters, we understand that built environment not only reinforces traditional group identities and expressions of self but also, when urban structures are altered, creates new symbolic expressions and identities. More specifically, it is the link between urban built form and cultural attitude that enables urban space to be a powerful medium for such expressions (Rapoport, 1977). This cultural attitude may reflect on the patterns of people's movement behaviour. In particular, the movement patterns from different groups give a perspective of how people function in the present spatial structure of Hsimen quarter compared with the past. The syntactic analysis in this study has shown that the spatial pattern has been affected significantly by the patterns of interaction between urban space and the complex everyday life circumstances of gender roles and age groups. Some implications can be concluded from their interaction and adaptability with urban public spaces that translate into a

certain kind of spatial patterns with respect to spatial quality, scale, function, and symbolic meanings. Different functions or activities are usually assigned to specific urban public spaces which integrate with the complex in different degrees. Moreover, the contents of daily activities and their associated meanings change over time and lead to different spatial manifestation.

Specifically, the results of the analysis reveal the functions of such spaces with respect to numerical values of integration, connectivity and depth. The results indicate the existence of a cultural pattern as the numerical differences in functions appear in consistent order. It is significant, as Hillier asserts (1987:365), 'to detect the patterns in things, rather than just the way it is interpreted by minds'. The correlation study between spatial configuration and movement is applied for variables against 'logged movement rates' that is, according to Hillier (1993:44), usually best post-dicted for the result. The results of this study also show how well occupancy rates correlate with local integration, global integration and connectivity in the area being considered.

The analysis of Hsimen area has revealed the relation between spatial configuration and movement in the occupational use of space and the dimension of urban block and street space. The study has discovered positive attractors for pedestrian activities, such as shopping streets and subway station, and negative attractors, such as housing estates and the periphery of the site. Observation of moving objects and mean moving rates for each gate area are tabulated in Table 5.12, which shows that there are large differences in these rates in the different gate areas, and there seems to be a pattern to these differences. The seven gate areas which are close to the south-east corner of the pedestrian zone (gates 1, 2, 3, 4, 5, 6, 14, 15, 16) have an overall mean encounter rate of about 1090 people per hour. Those to the north and south (gates 7, 8, 9, 10, 11, 12, 13, 17, 18, 19) have a mean rate of about 387 people per hour. These differences seem to correspond broadly to the difference between 'grid-integration areas' and 'line integration area'. They also correspond broadly to the patterns of positive and negative attractors.

We find that the highest levels of movement are in the immediate vicinity of Hsimen plaza entrances and the 12.73m wide Hanchung Street (gate no. 2 and 4), while the second highest is located at the rectangular plaza between Wuchang Street and Oimei Street (gate no. 5). Moreover, movement rates appear to decrease in all directions as lines recede from these

major attractors. Both areas with highest rates belong to the pedestrian zone of the cinema theme park. It is a place for the gathering of adolescents and old people who go there principally for social reasons. According to field observation, the spatial activities occurring here include not only shopping at clothing stores, video and record stores, instructional electronic and mobile phone outlets, and game stores, but also visiting restaurants and coffee shops. Here people can stop and sit. The experience of these spatial activities indeed reflects the articulation of consumerism and carnival city life.

However, movement rate falls off as the negative attractors are approached. These are located at the edge of the areas, such as gate numbers 10, 11 and 19 at the 25m wide Huanho South Road and the 46m wide Chunghsiao Road at Section 2. Their spatial characters are lack of continuity with uncommon activities such as storage, mechanics and appliance maintenance, and parking underneath the highways, which obviously discourage the pedestrian activities (See Table 5.12).

These phenomena not only illustrate the current condition of the old quarter, but also define the difference between the current spatial pattern and the old spatial pattern of the historical centre. These can be explained from two aspects. First, the obvious one is the spatial change of social centre that is clearly reflected from the shift of urban centre to the east in relation to depth, integration and connectivity of the area as a whole. For example, under the traditional spatial arrangement the social activities were usually centred on the folk temple, which was often regarded as a centre to linking the surrounding areas in order to define the domain of settlements in the late Ch'ing Dynasty. A particular spatial pattern of long, deep winding streets was then formed as a linkage in the centre in association with a variety of functional uses at the time. According to previous analysis, the mean depth of old Mengchia (presently Wanhua) was 18.305 (see the scattergram in Fig.5.11-1) and this high value was due to the deep core formation of irregular organic spatial pattern of the old settlement. Certain routes of connection limited the access to the centre from the surrounding neighbourhood. Eventually, the spatial form was mainly evolved along those axes and then expanded outward. That is why most activities were concentrated along particular linear streets in the old settlement.

In contrast, the value of mean depth of present Wanhua is about 7.9062 (see the scattergram in Fig.5.16b-2), which is much less than the value of old Mengchia. The present spatial structure is distinctive in its shallow-core regular grid pattern and shows that the current pattern of interaction between urban spatial form and activities is different from the past pattern[74]. The change of spatial activities in the urban centre is the second aspect. It leads to explanation of the transformation of urban spatial form. A reconfiguration of spatial organisation has ripped apart the traditional architectural relationship between spatial form and activities in the urban context of current society. The measures of depth values in the old one and the current urban centre indicate that the spatial structure has been transformed from a deep-core type into a shallow-core type. The analysis reveals a pattern of interaction between user and environment, and discovers elicited preferences for certain features of the environment which can be explained according to the following analysis of 19 selected gate areas. Fig.5.32 are the graphs plotting movement rates against all 19 observed gates and indicate the strength of each gate for different moving objects: men, women, and teenagers, plus a combined total of all three categories.

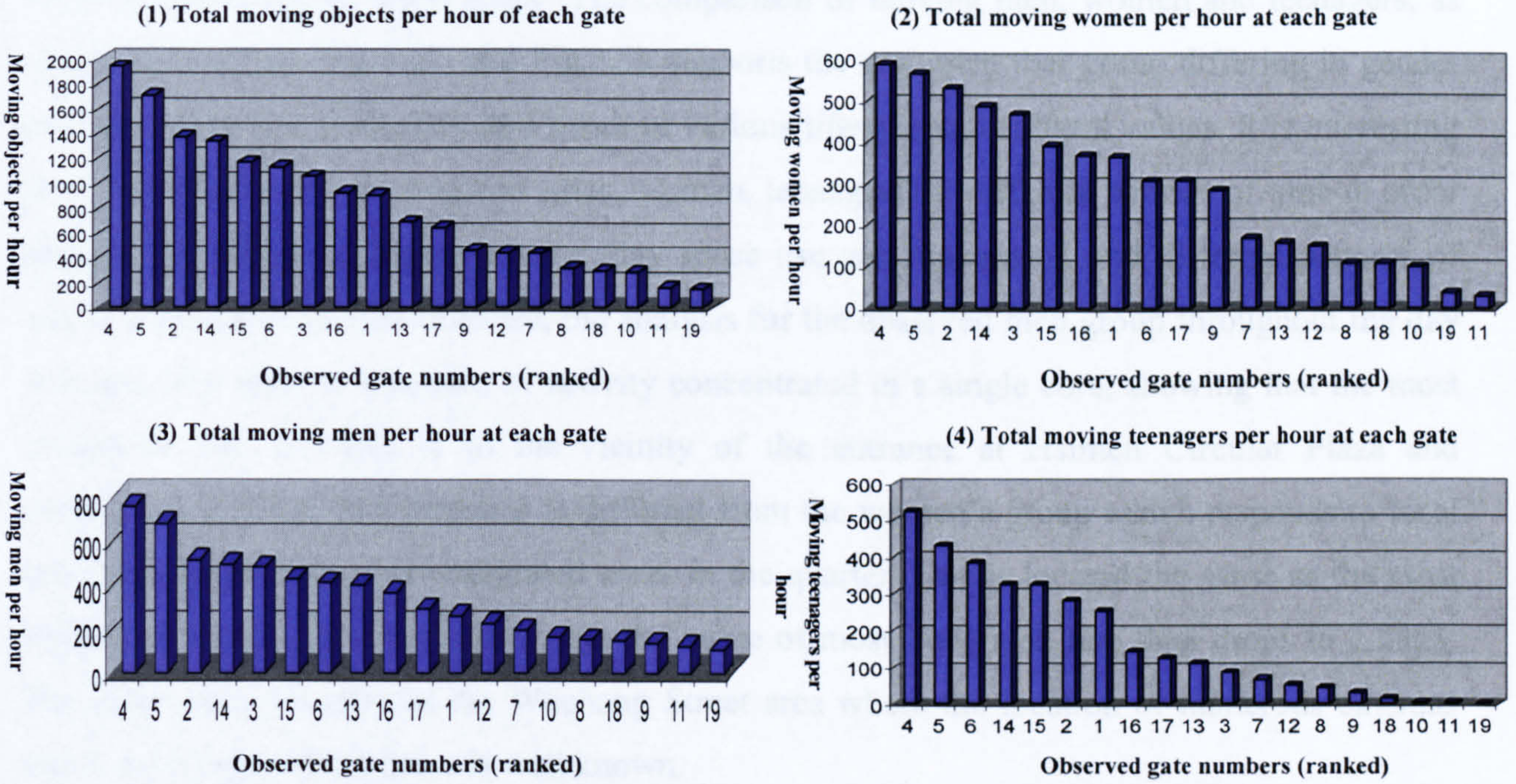


Fig.5.32 Observation of each moving object per hour, plus a combined all three categories for Hsimen Area

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[74] The spatial activities of the old centre in late Ch'ing Dynasty include service activities such as shipping company, warehouses, opium smoking stores, restaurants and funeral services; wholesale activities such as dyers, fabric shops, brewery; and retail activities such as Chinese drug stores, glass-made light decoration shops, foreign good stores, gold and jewelry shops, porcelain shops, and street vendors that attracted all the streets' activities in the past (See Huang, Shun-erh, 1975:9).

Gate number	Depth	Connect-ivity	Rank of observed moving objects at each gate				Order of total moving objects	Location
			Male	Female	Teenager	Child		
1	3	8	2	1	3	4	9	77m Chunghua Road
2	3	3	2	1	3	4	3	Hsimen circular plaza
3	2	8	1	2	3	4	7	16.36m Chengtao Road/ Tienhou Temple
4	4	2	1	2	3	4	1	12.73m Hanchung Street
5	3	5	1	2	3	4	2	Chunfei cinema plaza
6	2	7	1	3	2	4	6	16.36m Hsining South Road
7	2	5	1	2	3	4	14	16.36m Hsining South Road
8	2	7	1	2	3	4	15	Hanchung/12.73m Keifu Streets
9	3	8	2	1	3	4	12	77m Chunghua Road
10	2	4	1	2	4	3	17	46m Chunghsiao West Road Section II
11	4	1	1	2	3	3	18	25m Huanho South Road Section I
12	1	11	1	2	3	4	13	12.73m Kunming street
13	2	10	1	2	3	4	10	16.36m Hanhou Street
14	3	3	1	2	3	4	4	Lai lai Department store on 12.73m Wuchang street
15	2	11	1	2	3	4	5	12.73m Omei/Kunming Streets
16	2	5	1	1	3	4	8	12.73m Kunming/Omei Streets
17	2	8	2	1	3	4	11	16.36m Chengtao Road
18	3	8	1	2	4	3	16	16.36m Kangting Road
19	3	9	1	2	4	3	19	25m Huanho South Road Section I

Table5.12: Spatial properties and order of observed moving objects at 19 gates

The axial analyses of the selected area are compelling evidence that different user groups respond differently to urban space. The comparison of moving men, women and teenagers, as shown in Fig.5.46, Fig.5.47, and Fig.5.53 supports the argument that group differing in gender and age, use space differently as a result of various lifestyle and cultural values. It is interesting to examine each of the categories (men, women, teenagers) at different periods of time in order to discover different patterns of everyday space use and movement, and different patterns of spatial configuration. For example, the analysis for the observed men group throughout the day indicates that there is a pattern of activity concentrated in a single core, showing that the most integrated line (2.5432) is in the vicinity of the entrance at Hsimen Circular Plaza and connection to Hanchung Street. It is different from the women's group which responds to local spaces by formulating two integrated cores in the quarter. One is located the same as the most integrated area of the men's group but the value of most integrated line then drops to 2.2865. The other one is located at the Wuchang Street area where the location of numerous cinemas and Lai-lai Department Store is well known.

On the other hand, the most segregated lines and areas for the men's group are mostly scattered within the alley spaces of the old quarter while the women's group seems to have the least response to the use of space along Huanho South Road. The response of men and women

groups to such spaces reflects two aspects if we further examine the variation of the spatial activities in local spaces. Table.5.11 is a tabulation of spatial properties: depth and connectivity, and order of each observed moving object for all 19 gates, plus order for all moving objects taken together. Table 5.12 shows the spatial activities together with spatial character and functions of the 19 observed spaces. There are two aspects:

1) The different social value and lifestyle of men and women seems to regulate the coexistence of different groups of people in urban public space. The observation of men's and women's behaviour patterns in the old Hsimen quarter shows that their response in particular spaces is very different, such as in the area along Wuchang Street which is the favourite place for shopping and movie goers. It seems that women are more inclined to these kinds of activities than the men. This phenomenon also signifies that the response of women to the use of space today is different from the old days. Women now have greater flexibility and choice of civic participation which allows them to freely engage with the variation in use of urban public space rather than just to participate in special occasions of religious activity in temple space as in the old days.

2) The spatial activity of different user groups in the old quarter also correlates with other factors, such as spatial use and scale, in addition to the prime factor of spatial configuration which regulates the activity of user groups in interaction with urban public spaces.

5.4.3 Spatial change and adaptability: old space new face

Table 5.12 indicates that the response of daily movement activities (by each user group) to square/plaza is higher than the response to other spatial configurations. Gates 4, 5 ,2 and 14, located within the function of square and plaza, reflect themselves as stronger spatial attractors according to the order of total moving objects ranked as 1,2,3,4, etc. These four gates have an important role in regulating the movement pattern in their catchment areas. They also have in common the characteristic of informal and open spatial quality, different from the formal square of Temple space. Besides, the ratio of spatial width to building height of these gate areas appears to have a pattern below the mean value 1.10, reflecting that this factor has a significant influence in regulating the activity of a user group in urban spaces. Further examining the

spatial activities of these four gate areas, it seems that there is a common pattern of interactions between users and spatial activities. The use of 24 hour-convenience stores and fast-food chain restaurants reflects the lifestyle of people nowadays and indicates the power of Western culture in this old quarter.

The correlation between different user groups and their movement activities in street spaces signifies a pattern of interactions between uses and form. The rate of people's daily movement activities decreases with the increasing size of streets: secondary street > main street > boulevard > freeway. The movement patterns along those street spaces are also reflected from the patterns of global integration with respect to various user groups. (See Table 5.12; and also Appendix 1) The different layout of the streets in the old quarter provides a sense of legibility to people but shows different encounter rates by different user groups in those street spaces. This phenomenon reflects 'spatial culture', which refers to spatial activities and usages of these spaces, and also indicates their spatial character. For example, the location of schools at gates 9 and 17 of boulevard and secondary street indicates that the schools are the positive attractors for women; observation shows that it is primarily the women who accompany the children to school. In comparison, the secondary street shows a good interaction with various user groups and reflects a common spatial-use pattern: grocery stores and entertainment facilities within the mixed use area reflect the lifestyle and current culture of local people. Moreover, the street space has a character of spatial continuity. This continuity, which is seen in the similar pattern of arcades and units of shop windows at the ground level, defines the identity of the spaces and seems to be an influential element in generating positive and high response of various user groups in spaces such as the areas at gates 6 and 15. Indeed, it proves that the essence of a successful movement is a reflection of spatial unity and legibility.

In general, the streets here act as integrated extensions of the functional spaces of buildings. They all extend their activities towards the street domain and interact together, as well as with the passers by. Pedestrians are typically exposed to a series of views gained by turning corners, entering alleys, or doorways, and emerging from closure into small courtyards and squares. This study shows that the street can be seen as a socio-cultural synthesizer as well as a movement distributor. The old quarter is enhanced by the retail activities at street level though some of values have been lost, for example, the sense of historical continuity such as the

old city wall which has become the boulevard (Chunghua Road). However, the analysis has shown that, in comparison to square and plaza, street space is of secondary importance in the response of various user groups.

5.5 Spatial Revelation of the Old Western City Centre of Taipei

The above spatial analysis of the old city centre of Taipei has shown that the old centre has been transformed from its dominant economic and social position into a sub-cultural life centre. The colonial grid pattern of the old area competes with the post-colonial grid of the new urban area and leads to a readjustment of spatial functions and cultural activity in the old urban centre. It has become a global type pattern in locality. The findings indicate a deep structure and significance beneath the current spatial pattern and point out the transformation rules of urban public spaces in the old quarter.

5.5.1 Deep structure and significance beneath the spatial pattern

This deep structure is embedded within daily life activities which are the genuine reflection of local culture. This is a residue in the process of cultural crystallization through the change of time. Structure is more than simply form and figure; it involves totalization, schematization and perspective. In Derrida's description, structure is the formal unity of form and meaning (Christina Howells, 1999: 30). In this case, the deep structure is embedded with a pattern of interactions between users and spatial configurations. The deep structure allows us to understand the spatial pattern as consisting of entities, in which the parts are conditioned by the whole. We can perceive not only isolated, discreet objects, but also relative totalities and the system. In so doing, we are able to understand the meaning and reveal the values and cultural systems, which always consist of relations between the whole and the parts, and between the parts in the system.

The deep structure reveals the inter-relationship between growth and urban form that leads to an understanding of the process of spatial transformation by means of extension, substitution and additive transformation. Indeed, the latter form is the most important since it protects both city character and human memory. So the understanding of deep structure can

answer the fundamental question of spatial transformation, that is, how to make this process both conscious and democratic rather than random and exploitive. This deep structure seems not only to explain the formation of surface structure behaviour, but also to create a more elegant and general form of elementary processes. In the case of Hsimenting, there is a social logic of colonial grid pattern, which is built with a reorganization of some older, sacred and heterogeneous space into geometrical and homogenous Cartesian space. The deep structure is made up of syntactic depth, which has to manifest in an actual environment via a set of transformational rules and operations.

When we further look at the relationship between depth and the level of the activity of different user groups of the selected area, there is a significant fact beneath the spatial pattern. The scattergrams (See Appendix 1) and the depth values in Table 5.13 indicate that the correlation between depth from the carrier Hsimen Circular Plaza and the level of use of spaces in the study area is very low and insignificant. These non-relationships are important signs of the spatial structure of contemporary old Wanhua district. These signs show that the shallow-core type of grid pattern is not as strong as the deep-core type of organic or deformed grid pattern in regulating movement in the catchment areas. Moreover, the Hsimen old quarter is no longer at a spatially integrated core of the city as a whole, as the central core is shifted to the east of the city, as indicated in Fig. 5.16b-1. Besides, the correlation between user groups and their activity patterns within urban public spaces indicates that the men have dominated the use of such spaces showing that Hsimen old quarter is embedded with male-oriented spatial culture.

5.5.2 Transformation rules of urban space in the old city centre

From the socio-spatial point of view, the result of spatial analysis in this chapter has revealed that there is a strong association between social structure and daily life such as patterns of movement and occupational uses of spatial activities within the old urban centre. It indicates two transformation rules in the formation process of urban public spaces. The first rule is that the spatial transformation has to be related to the structural change within the socio-cultural basis of society. Such structural patterns' are generated through the resolution of the conflicts between the dynamic state of people's daily activities, like movement patterns, and the forces of

symbolic and value systems[75]. Evidence of change of spatial depth has indicated that this structural change is due to the shift of spatial centres in relation to the whole spatial configuration of the city. And the second rule is that each transformation would occur with a restructuring of totality in space until the whole spatial structure is in a stable condition. It means that the value of mean depth tends to become 8 steps in this case (See Fig.5.11a). And this restructuring in turn would alter the definition, meaning and function of the individual spaces and their relationships within the whole.

5.6 Conclusion

The study of the Western zone has indicated that the old centre embraces a hierarchy of superimposed configurative systems multilaterally conceived. The configuration system has a flexible structure which demonstrates that spatial elements can be added or taken away, so that the structure of urban spatial system can grow or change without losing coherence. It shows some factors in articulation with people's social activities which affect spatial character and identity of socio-cultural space. These factors can include the spatial scale, pattern of land uses and values, architectural details, and spatial form. The revelation of these factors also allows us to recognize the contemporary old district without bias and to acknowledge the spatial identity which is embedded within old districts. It is also worth reiterating the notion that the spatial structure emerges as the result of the interplay of spatial forms about the value of traditional space and individual choices about the preference of usage of space. The complex interplay of spatial form and choice is a central element of the re-emergence of the form of this old area.

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[75] The traditional value system in Chinese normally refers to two dimensions: firstly, 'great tradition' always relates to the value of ideology such as the emphasis of 'Jen' in Confucian philosophy; and secondly, 'little tradition' often indicates to the daily life of grass-roots such as social customs, rituals etc., or also is interpreted as upper-level elite culture and lower-level popular culture respectively. (See Li Yih-yuan, 1995:383-395.)

5.6.1 The Value of Traditional Space in the Present-day Old City Centre

In the historic homogenous proxemics village or neighbourhood, though the socio-spatial environment was extremely complex, it was understandable to its residents because they had learned to know it over a longer period of time and had shared its cryptic symbols. The representation of socio-spatial environment of Wanhua District in the post-capitalized society seems is not as complex as the case of proxemics village. Instead it is rather too emphasized, but with simplification, over the recognition of globalization culture which is dominated by American culture nowadays. Because of this phenomenon, it becomes difficult to search for the real significances for the identity of place as well as the sense of place if we don't have a real understanding of the deep structures embedded within the spatial environment. According to David Harvey (1973:295), 'Society comes to be viewed as a set of structures in the process of continuous transformation'. In this sense, deep structure may be explored through the recognition of the value of traditional space. Genotypes can be discovered from the implicit social practices embedded within the 'text' of spatial configuration. The reading of such historical 'text' can extract the hidden message of a society's ideology and the meanings of its own culture, as this 'text' material reveals several explicit manifestations and expressions of these sensibilities. In fact, culture not only appears in human thought, but it also reflects social activities and the values of society. This study indicates that traditional space bears the value which is important to the identity of a place. Such value can be related to the scale and occupational uses of the traditional space.

The analysis of old Hsimen quarter gives the mean value of the ratio of width to height as 1.10. In his case study of Essex, Cliff Moughtin (1991: 74) draws the conclusion that 'a ratio, height to width, of 1:1 is not too tight for comfort, but that 1: 2.5 is as open as can be tolerated.' Taking Moughtin's interpretation as reference, the study indicates that there are 11 gates' areas below the mean value which have a state of stronger attraction, and there are 9 other gates' areas above 1.10, which have a lower attraction (See Table 5.12). This implies that the spatial scale affects the response of people to be present or absent from a space, though it is a secondary factor to spatial configuration. According to the analysis, narrow streets facilitate stronger movement pattern; their quality of enclosure encourages movement. For example, in a shopping street side to side window gazing has no impediment and indeed is invited by the

physical form of the development. Because of this traditional spatial character, the old urban centre responds functionally and visually to the time/motion scale of pedestrian freedom of movement --- gaining a specific and organic unity and identity of scale.

The study also indicates that the intensity of movement pattern has a higher rate and values at the commercial areas which are often adjacent to public plaza or running along the main street. For example, the instrumentality of the linear shopping street along Hanchung Street and the vicinity of entrance at Hsimen Circular Plaza have the highest land prices and also have a higher encounter rate of pedestrian movement. The land price appears to decrease in all direction from these two spots in the old Hsimen quarter. This decrease is consistent with the lower movement rates at the north and south parts of the quarter. The land value is a reflection of capitalism which shows the response of users who are attracted to particular spatial form. This interaction indicates that a successful place is a space of everyday life and a place of use values. Their realization is understood through the social interaction in the old district.

The study has also revealed that there is a logic behind the spatial configuration of the old Western District. The logic is regulated by socio-cultural activity, as appeared in traditional street space and temple square/plaza. The traditional street here is per se a place endowed with basic forms. The old Chinese street culture transcends time and place. For example, Kangting Road (see Fig.5.7) and Tihua Street are two obvious cases which demonstrate the connection between form and street activities. As the backdrop of these streets, the buildings serve the space rather than dominate. As a matter of fact, the character of these streets spaces is enlivened with conversation, body contact, meeting friends and life patterns like being part of a family, and being part of a community. Seemingly, the traditional square, like Lungshan Temple's entrance square, is similarly successful in carrying out its social function and activity in association with its spatial form. Here ritual contact, connection with own social peers, remains a constant in our changing daily lives which are truly lived at communal level. On the contrary, modern enclosed courtyard, like Lai-lai Plaza in between Lai-lai Department Store and Wankuo Commercial Complex, is entirely different from the traditional urban public space and is smeared around the edges of modern skyscrapers and seems often worthless or even worse and turns away the good response of users. And thus, zoning grows naturally out of the type of movement of a particular street, and the spatial configuration tends to be related to the type of

movement. If we regard the street as per se spatial, then its form can be considered as a 'passageway of continuity' which indicates a flow of movement from that (street) form to a destination. In traditional settlement, the destination usually pointed to traditional plaza or square where movement would cease. The integration of street and square became the basic form as a whole which expresses the social logic. The movement patterns in the quarter demonstrate their association with these types of spatial forms, which take on multiple aspects as a place to meet and exchange information, and to collectively perform certain activities that express their spatial identity.

5.6.2 A Re-reading of the Contemporary Old District: Spatial Identity

The demystification of contemporary urban public space in the old urban centre through the integrated and holistic spatial analysis has not only led us to understand the spatial genotypes and identity embedded within this old colonial grid urban pattern, but also helps us to re-acknowledge the reasons for the shift of urban centre and the changing spatial structure of the old district in relation to the global context of the city. This study also helps predict the growth pattern in the future urban development of the city and reconstructs the spatial identity of the city through the recognition of genotypes in the old district. Such spatial genotypes give the old urban area of Taipei a special personality.

This old urban quarter is a representation of historical colonial grid pattern that has provided an ideal ground for investigation of spatial transformation. The interactions of complex forces and mechanisms of social-cultural encounters in the urban space of this old quarter can clearly capture either the way in which the city is changing or its emerging multi-centricity. The Japanese deployed the grid plan in their colonial expansion emblematically, as a reminder of their spiritual origins as much as an efficient organization of land use. They began to impose another urban order with six- or eight-storey tenements lining a tight grid in the city of Taipei. The layout of the district signifies a colonial representation which is a reflection of colonial power domination and social demarcation. The dominant grid pattern of Hsimenting, in contrast to the remaining parts of the district, had a particular, persistent significance as an emblem of the structure of the Japanese colonial world.

In the twenty-first century, a vital urban environment is one that supports heterogeneity. The design concepts must be re-interpreted in spatial genotypes which can cope with the current environmental conditions. A new urban spatial order is established to respond to the need of the current spatial situation such as the relationship between urban forms and contemporary socio-cultural activities. The genotypes of urban public spaces provide the clues to an understanding of the cosmological capacity of traditional urban form. They explain the significant ordering power beyond the spatial configuration in association with daily life. These spatial genotypes not only provide the sense of familiarity, but also allow an instant grasp of geographical orientation, as well as a sense of security for people.

Chapter 6: Reading New Eastern Zone – The Deep Structure of Urban Space in the New Urban Centre of Taipei

6.1 Prologue

This chapter is the second part of a spatial analysis at district level with specific study of the new Eastern zone of Taipei. This new zone, which has been developed from the late 1960s onwards, is distinguished from the old Western zone not only by its post-modern grid pattern, but also by the social patterns in its uses and appropriation in postcolonial Taiwan[76]. Besides, it is argued that this place is without a long history, or precisely speaking, without a distinctive cultural form of heritage in contrast with the old area of the city, though within recent decades the new zone has been constantly reinvested with desire and meanings which have led to the formation of new cultural urban forms[77]. Some questions are formulated in these respects.

According to Hillier, the movement pattern configures the spatial form of urban public space as proved by a number of case studies in both organically-formed traditional settlements and urban grid cities. Sufficient evidence has been found to draw an account of the mechanisms that link spatial organization (morphological patterns) to social life (See Hillier & Hanson, 1984; Hillier et al., 1994, Hillier, 1996, 1998, 2001). But the question is, if activities and movements make up a substantial part of the dynamic of an urban system and of social life, how is such a systematic, culturally-bound phenomenon related to urban morphology of modern cities? In particular, the local situation as in the case of Taipei has raised specific speculation leading to another question: why is the spatial organization of the new Eastern zone differentiated from the old Western zone and its spatial status transformed from its peripheral position to become a new centre of the city? Is there any logic or implication behind this development? Can we detect the difference in these two regions in terms of underlying structure from the perspective of movement patterns, from which we could then decipher the deep structure of the new centre? It seems that the latter is often questioned by some practitioners like architects and urban designers.

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[76] Postcolonial era here refers to the period after the liberation of Taiwan from Japan in 1945, which was the same year as the beginning of Taiwan's decolonization and hence of its postcoloniality. According to some scholars such as Fedric Jameson (1988) and Edward Said (1993), "postcolonial" is seen as an alternative to westernization. In a sense, it is derived from the triumph of neo-imperialist control to market penetration on a global scale.

[77] The denotation of new cultural urban forms here particularly refers to the building forms such as global corporate headquarters, shopping malls or department stores, and luxury hotels articulated with their front-plazas and grand streets in the urban context of new Eastern zone. Indeed, urban form is the physical product of urban activities and planning actions. Some scholars also elaborate the meaning of urban form as the confluence of three corresponding elements: the street plan, land subdivision and built objects. (See Scheer and Petkov, 1998: 298-309.) (See also previous chapter two for the explanation.)

They argued that the study of movement pattern could not really justify the deep structure of urban space in the city.

Certainly, there is no simple answer but one thing is sure for this study that needs to rely on understanding the nature and meaning of the "spatial genotype"[78] from which we can reveal basic spatial structure of new Eastern zone. The quest for a spatial genotype is a prerequisite procedure for establishing self-identity of a place because spatial genotype is a root, just like the genome as the genetic material of an organism in biology, as the basic requisite to constitute the underlying structure for organizing the spatial structure and form of the city. It is a kind of spatio-cultural representation that let us have an experience and insight into the living space of the city. In this regard, an empirical study of a specific area of the new district is carried out to concentrate between the generic functions of spatial occupation and natural movement, in addition to the recording of daily activities in local street space and public squares. The study, through field observation, behavioural mapping and analyses of syntax properties, has shown that the scale, density, and urban forms of this new expanded urban cultural setting have created a dramatic effect on the overall spatial pattern of the city. The measure of syntactic properties through the spatial analysis is clear enough to uncover the underlying structure of spatial configuration. It provides a robust and reasoning view of why the formation of spatial structure and urban order of this new zone is substantiated.

The overview of spatial transformation of new Eastern zone is organized as follows. In the ensuing sections, a view of two significant changes in spatial forms of the new development zone since the post-war period is given a deeper analysis. The first of these occurred in the late 1960s, with the shift of spatial development totally inclined to the eastern region of the city. The second change occurred during the late 1980s to the present time, and represented a final shift of spatial centre with power representation in the new East zone in view of the post-colonialism and globalization. In parallel, a micro-study of specific area is also carried out for a major purpose: to give a detailed analysis of present reality of spatial environment which delivers specific messages and grand narratives to be read and studied for its own sake and for the insights it gives to the operation and reproduction of urban space in this new zone.

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[78] According to the Concise Oxford Dictionary, 'genotype' is a biological term which is defined as the genetic constitution of an individual that determines a particular characteristic of an individual. In this study, genotype is referred to, as a genetic code; possess the sociologically important structure of the spatial configuration.

6.2 Background and Context of Eastern Zone

During the late 1960s the growth of Taipei city was a natural response to movement of populations seeking the real advantages of an urban environment. New landscapes of land division and connection, power and inequality were formed that did not respect previous urban orders. The expansion of the city to the Eastern region made representation difficult because the city had lost its old structure and identity by giving way to a new spatial configuration. According to previous analysis of the old centre of the city, we have learned that the recognition of the old centre is not given and determined but has been made thorough social processes of territorialization, and that such social processes are embedded within discursive formations of power and knowledge. In other words, the boundaries of the old city are defined according to the affiliation of the local residents. For instance, boundaries of the old city centre could be seen as a form of symbolic feature for the old regions, and identity of local communities. For the new Eastern zone, the story is quite different because its formation of boundaries is just in a short period of time. The boundaries are not naturally evolved through a process of historical development but are assigned as pure political lines to demarcate the new urban area without a reasonable justification. However, in the last three decades the new urban area has continuously been transformed to construct new local places and spatial identities, to restructure local practices, and also create new social relations of power that seem to solidify these new functional boundaries, although the new zone is questioned as a successful popular place with local identity.

In context, the new urban area illustrates the production of new local space within a globalizing environmental discourse. It is interesting to see that this part of Taipei is earmarked by its monotonous and repetitious grid pattern which is actually a manifestation of global image and the shift of power representation. This new urban pattern represents new spatio-cultural system which has engaged deeply with globalized culture rather than integrated to its own social history in a general sense. According to the field study, the fabric and form of the new urban area shapes activities by shaping access and movement although the new urban arena is made up of fragmented spaces of occupational use scattered in different quarters without a coherent totality for the city. In order to understand how the new urban centre is formed and why its constructed difference is generated through the transformation process, it is necessary to read, through the

territorial boundaries of new Eastern zone, its structural patterns of urban space, land uses and values, and social patterns to gain a clear picture of the background of this new zone.

6.2.1 Location and boundaries of Eastern zone

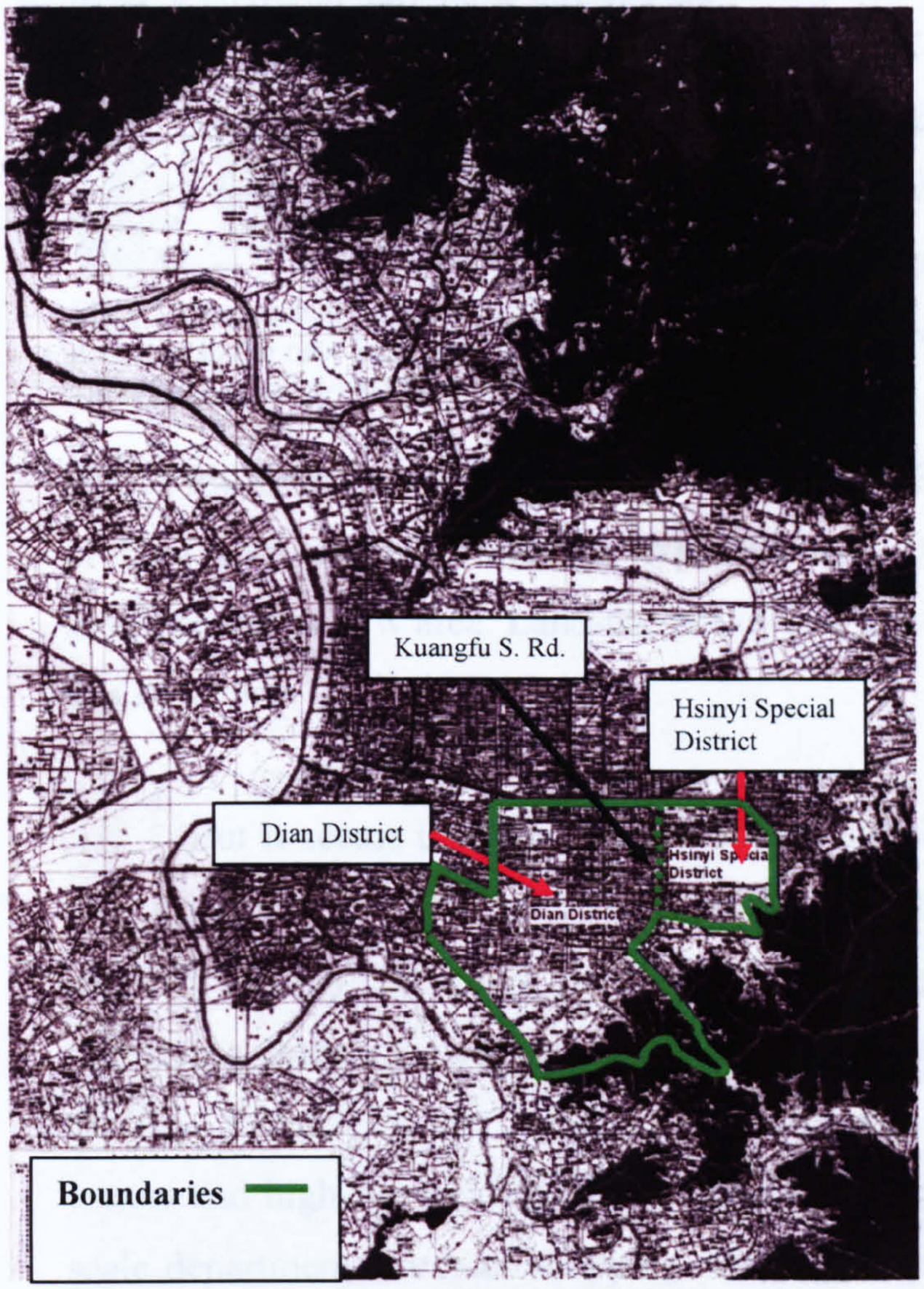

Fig.6.1 Ordinance survey map showing the study area of the Eastern zone: Dian District and Hsinyi Special District

The Eastern zone is located at the east of Taipei city. In general, the areas politically include Dian District and Hsinyi Special District, which are divided by the 30 metre width Kuangfu South Road. Boundaries of this zone are clearly defined by the major boulevards of the city. The zone is bounded by Sungshan Road on the east, Shinshen South Road on the west, Civic Boulevard on the north and the edge of the mountains on the south. (Fig.6.1) The zone is characterized by three main east-west boulevards including 40-metre width Chunghsiao East Road, 60 metre width Jenai Road and 40 meter width Hsinyi Road, and two main north-south links, 70 meter width Tunhua Road and 40 meter width Fushing Road. A mixture of tall office and residential buildings, and the addresses of the city's most high-class department stores and hotels form the public face of Taipei.

The distinctive domains, such as Dinghou market, Sogo commercial area and Tonglin commercial area along Chunghsiao East Road; Far Eastern Plaza and Corporate Centre along Tunhua road; and new Shin Yi Special District, are the spatial representations of new Eastern zone that have given a common perception of this zone.

6.2.2 The Patterns of urban space structure, land uses and values

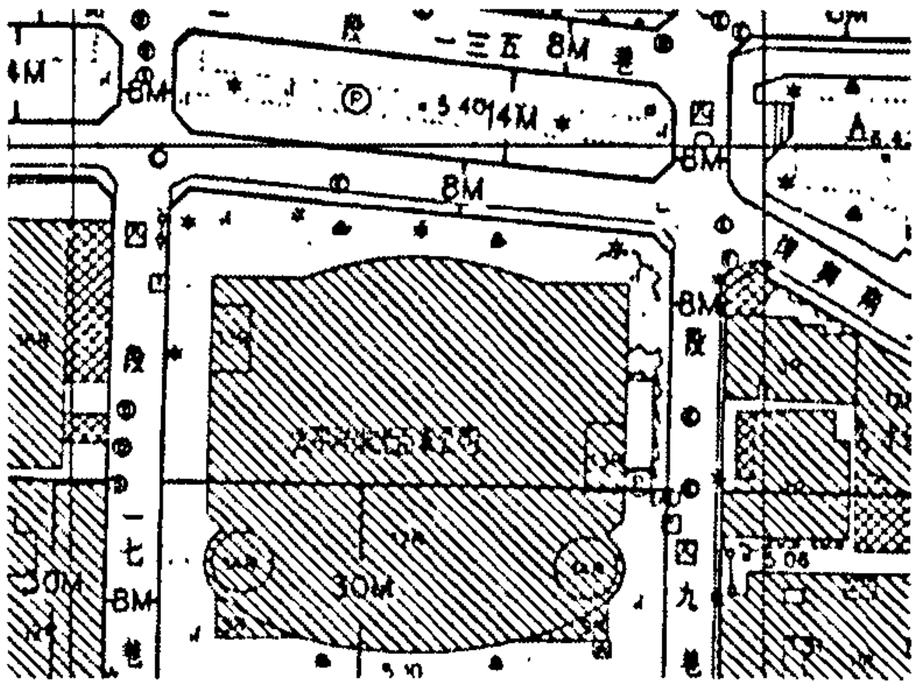

Fig.6.2 Large urban blocks and plot sizes are common in the new Eastern zone. (Source: Taipei Survey Map S:1/1000 Taipei City Government)

The context of new urban area is different from the old districts of the city. Patterns with larger urban blocks and plot size, which are obviously less than twice the density of old inner areas, constitute a coarse urban grain and dictate a different picture of building patterns in the new area[79] (Fig.6.2). A new centre is formed in the new zone with a very high-density development. This can be seen in the zoning map, which indicates That most residential land uses are classified as R4 (FAR=360%) and commercial land uses as C4 (FAR=800%). Zoning control, which defines uses of land and separates different types of uses by function, generally regulates the spatial development of new area. Land-use policy is a critical factor directing the urban development of this new zone.

But it seems that the city patterns do not clearly reflect local residents' desires of what they want the city to be, such as the height of buildings, the densities of land uses, urban form and city identity. Basically, policy makers lack specific knowledge and understanding of the underlying morphological principles which are crucial in governing the spatial construction of the city. Because of this zoning control, the new area has developed a new skyline of office towers and high-rise residential buildings with an average building height of nine floors, large-scale department stores or shopping malls that dominate the uses of the new city. Though the pattern generates a wealthy image for the new urban area, it seems to insulate itself from the surrounding city around. For instance, land values in the area are very much higher than in the other districts. (See Table 5.1 and 5.2 in Chapter Five.) For example, before 1973, the areas around Tunhua South Road were valued at an average land price between NT$5,100 (£102) per square metre and NT$6,100 (£122) per square metre (See Hsia, 1987:66). Nowadays, Dian district is the most expensive residential area in the city with an average land value at about NT$260,000 (£5,020) per square metre while Hsinyi Special District tops the highest land value

[79] The average density is 28 plots per block in new eastern zone as compared with 57 plots per block in the old inner areas. (See table 5.11 and table 6.2.) Besides, the average dimension of typical urban quarter is about 500m x 500m which is larger than the typical 250m x 500m urban quarter in the old areas.

of commercial area at about NT$800,000 (£16,000) per square metre.[80] However, most of the land in the special district is still vacant or not yet completely developed. The current land value is almost at least 50 times higher than the value at 30 years ago. Obviously, the high land value of this new urban area restricted it to particular social groups. Only new middle class families and wealthy families can afford to live here. These groups of residents are likely to have different social values and cultural identity from the residents of the old western area.

People live in the interstices between vast high-rise glistening office towers and apartment buildings fronting the main roads. In contrast narrow laneways and alleys wind through the old areas of Western district. The eastern zone fully participates in the global flow of material goods and lifestyle desires. The cityscape is dominated by a global image composed of new shopping malls, international hotels, luxury condominiums and apartment buildings, but is in a form of fragmented spaces (Fig.6.3 and 6.4). These patterns raise a question we need to answer in this chapter: Why these phenomena occur and what are the underlying morphological principles that have governed them?

Fig.6.3: High-rise glistening office towers and apartment buildings fronting the main road: Chunghsiao East Road,

Fig.6.4: New shopping mall in the new eastern zone.

6.2.3 The Social Patterns of the Eastern Zone

The new Eastern zone is a global city with an international taste. This fact is not only reflected in its building images and uses, but is also indicated from its own internal social structure and consumer background. Suffice it to say that the social patterns of new urban areas

[80] See *The Chinatimes e-Newspaper*, 'Taipei section', 12/06/2002.

are identified in their uses and appropriations. The social patterns refer to the concrete sense of events, actions, and interactions that take place in urban public spaces in the quarters of Eastern zone and also to the subjective sense of experiences and the images evoked. According to the official statistics by the Taipei city government[81], middle class families and wealthy families are the major resident groups in this new urban area that build the basic social structure of districts in this new zone. Besides, as we observed, most of the consumers in the new area belong to groups of 'white-collar workers' and businessmen or high-income young professional women as compared with students, teenagers, old people and citizens of the adjacent Taipei Hsien (province) in the old Western District. They embrace a new life-style that attracts a new wave of social activities in this new zone. The agglomeration of numerous new recreational and leisure clubs, upmarket socio-cultural places such as multifunctional bookstores internet cafes, fashion boutiques, jewellery stores and different types of international restaurants is evidence that a new pattern of social life is established and restructured in the new Eastern zone. The social activities here are largely limited to a narrow band of income which decides the trend of development. Suffice it to say, it is a place for middle income and high-income consumers that makes a specific social phenomenon for the city.

With the wave of immigration from the mainland in the early 1950s, a unique phenomenon occurred. Immigrants were allocated to the existing residential quarters vacated by the Japanese. They became exclusive residential areas for this group of people who worked in Nationalist government and military[82]. Because of this population context, the social pattern of the new Eastern zone is quite different from the society of the old zone in the west. The identity of individuals and their relation to each other and to the whole society were defined and regulated by their cohesion to the local community, clan association, and kinship system in the old settlement area. However, that kind of relationships does not seem very strong or even never existed in new urban areas. The contrast indicates that a different social interface is being constructed in association with the morphological patterns of new Eastern zone.

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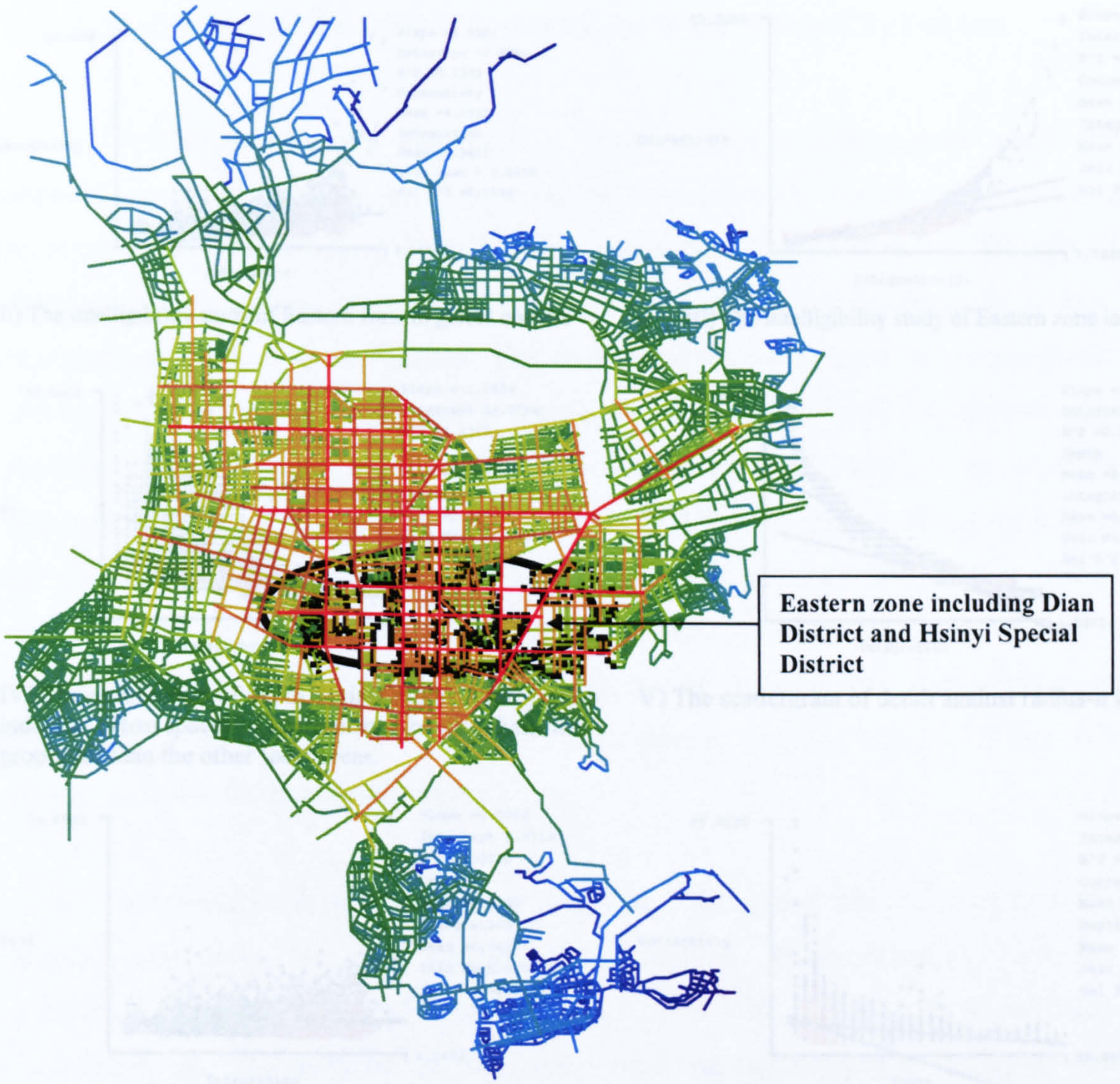
[81] See *Report on the Family income and Expenditure Survey*, Department of Budget, Accounting and Statistics, Taipei City Government, 1998.

[82] An informal interview with a local resident was conducted on 20 March, 2002. He is an old retired government official who had worked in the Urban Planning Department for more than thirty years and has resettled here since the early 1950s. According to his report, when they moved here, this place was not developed but only had a vast land of paddy fields with a few single storey Japanese houses concentrated in this area. (See also Hsia, 1987.)

6.3 The Change in Spatial Configuration: The spatial representation of Eastern zone in the post-colonial Period (1988-present)

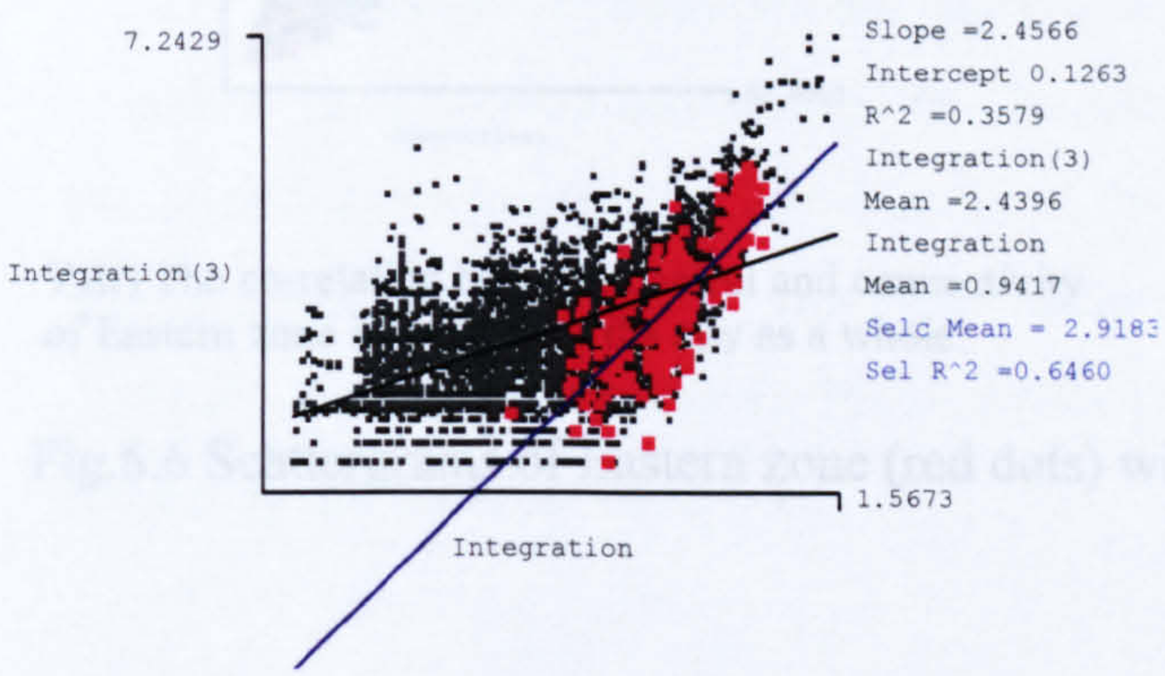
A spatial analysis, with reference to historical and theoretical description of the area, would allow us to see how this new area has functioned as a distinguished social and economic entity and is different from the old Western area of the city. In fact, the analytical study in previous chapters indicated that the integration core of the city tended to shift from location to location over time, unless the layout evolved in a perfectly geometrical manner and in an equilibrium and stable condition. In this chapter, the spatial analysis of Taipei city in 1998 has confirmed that the integration core is finally settled at the major horizontal and vertical axes[83], which are formed as a global central hub to connect the old Western zone and the new Eastern zone (See fig.6.5). In the following section, an analysis of the depth difference between the new Eastern zone and the old Western city centre explains the foundation of the structural characteristics of the new urban areas as a pro-western cultural genotype. Analysis shows that the geometric growth of new zone has caused the global and local integrated cores to shift to the east of the city. It also indicates that the expansion of the geometric logic of using larger blocks and wider streets in the new quarters has transformed the spatial structure which affects the movement pattern, as compared with the smaller blocks in the old Western area.

[83] This axial analysis in fig.6.5 shows the local areas structures and their relation to each other and to the whole city. Lines with high value (25%) of local integration are dispersed almost over the entire region.

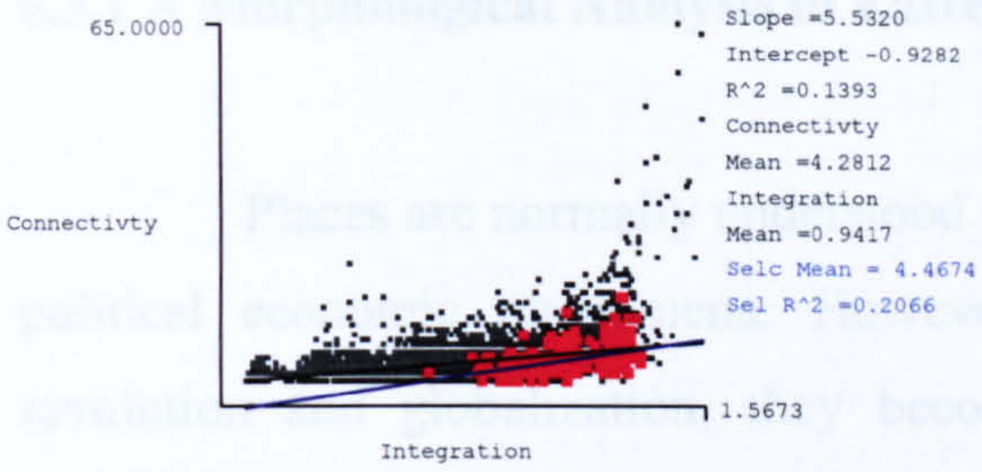


Note: The dark dots represent the area of Eastern zone including Dian District and Hsinyi Special District.

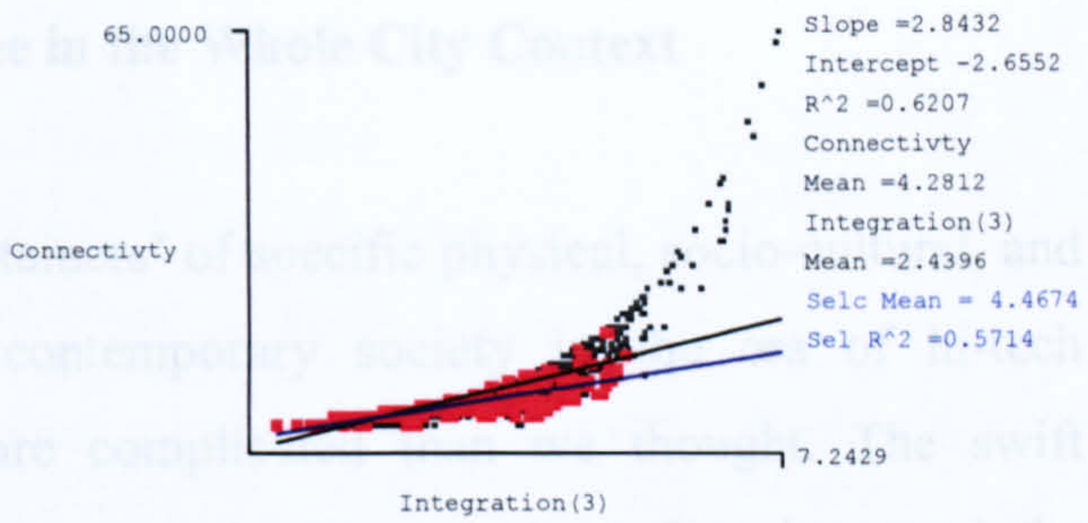
Fig.6.5: The axial analysis of Eastern Zone in the Context of Taipei in 1998



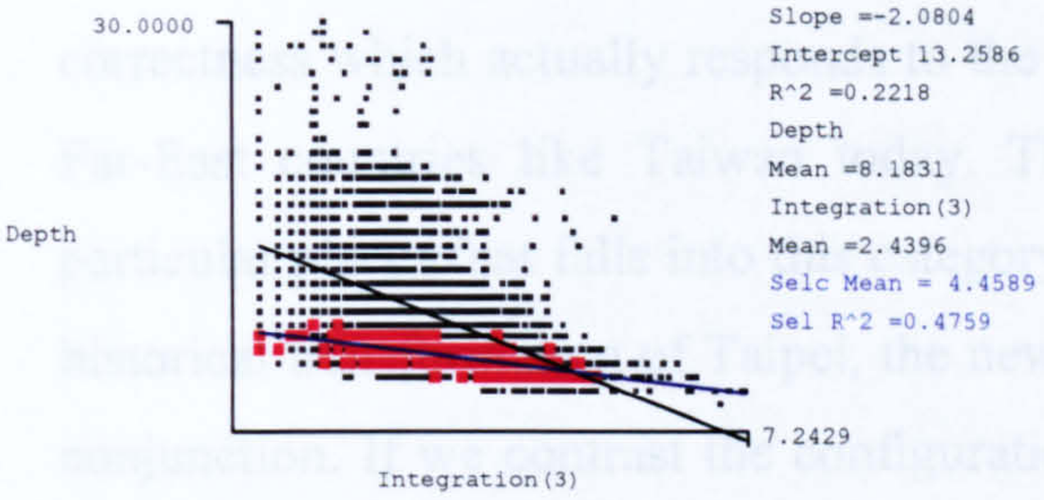
(I)The space of Eastern zone, the new centre of Taipei, highlighted in red, in the scattergram of radius-3 integration against radius-n integration for Taipei as a whole. The regression lines for the Eastern zone (blue) and for Taipei as a whole (black) are shown. The correlation coefficient (R^2) of scale synergy of the Eastern zone (0.646) is higher than the spaces of Taipei as a whole (0.3579), and is seen to manifest the new zone itself as an intelligible neighbourhood both locally and in relation to the rest of the city.



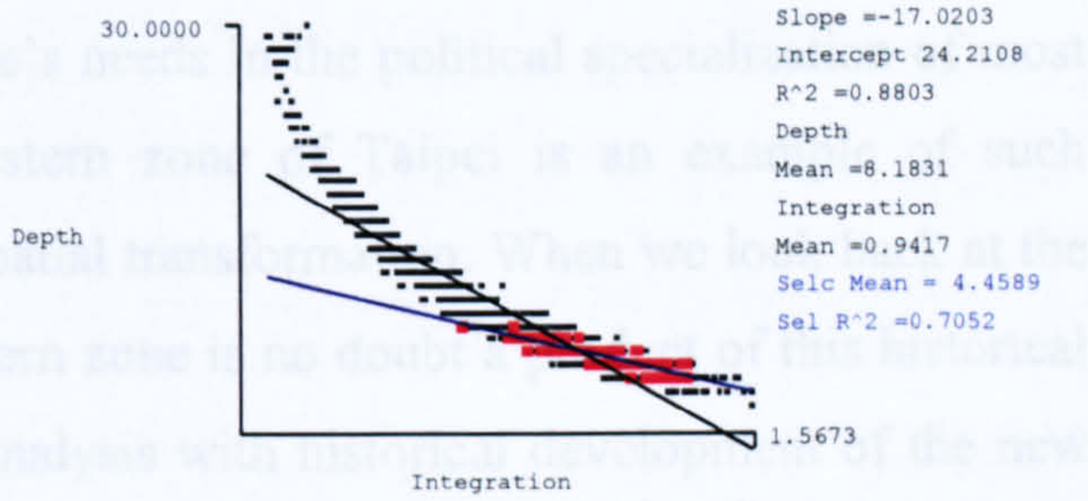
II) The intelligibility study of Eastern zone in global context



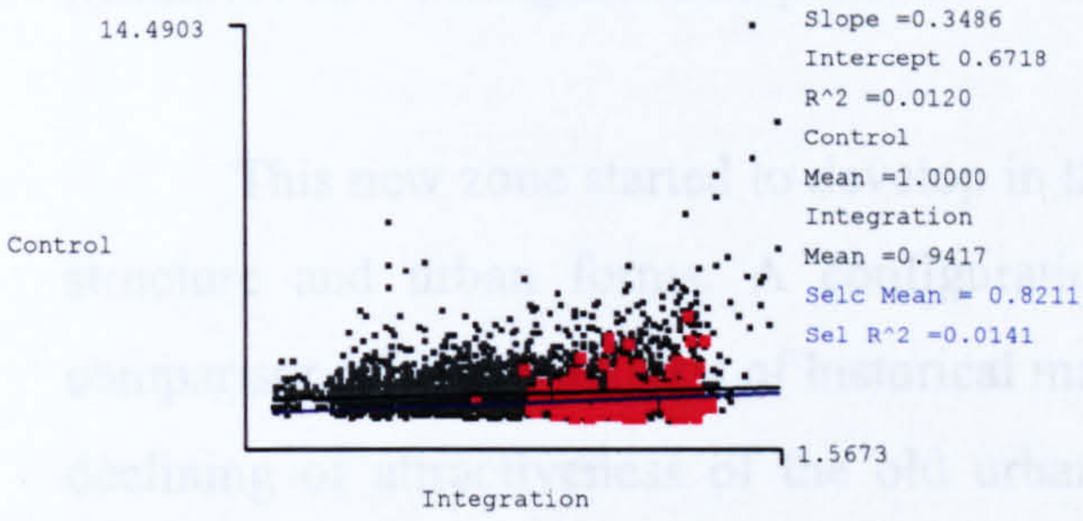
III) The intelligibility study of Eastern zone in local context



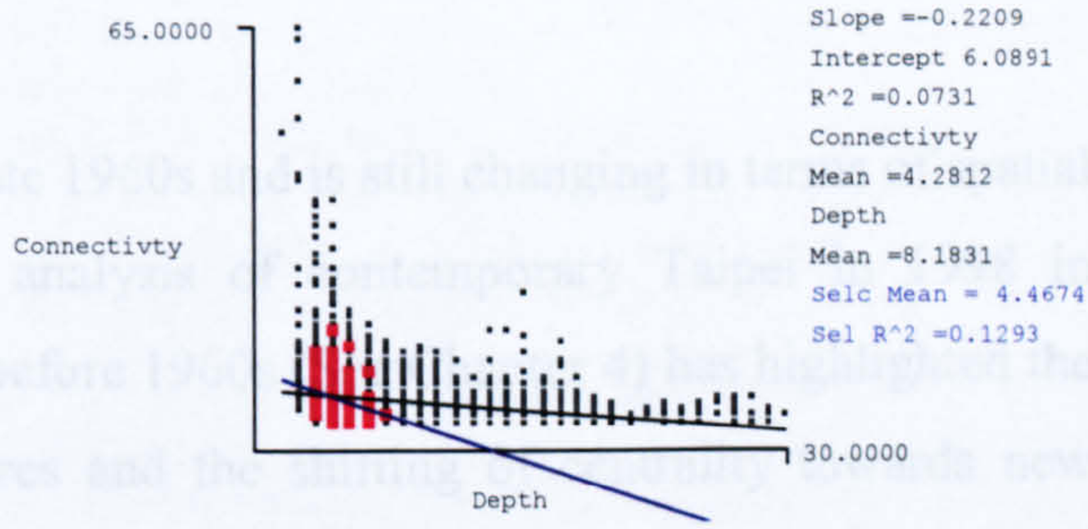
IV) The scattergram of depth against radius-3 integration indicates urban spaces in Eastern zone having shallower properties than the other local areas.



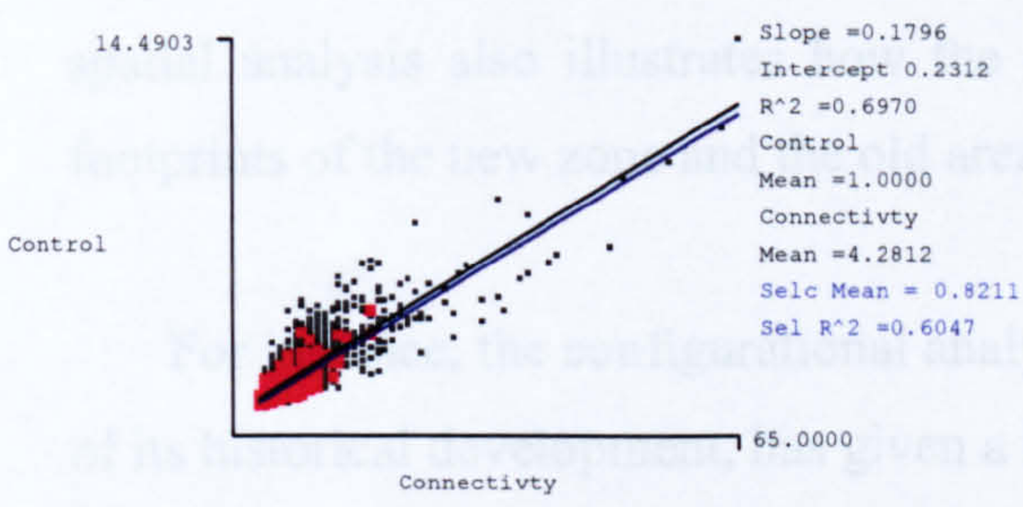
V) The scattergram of depth against radius-n integration



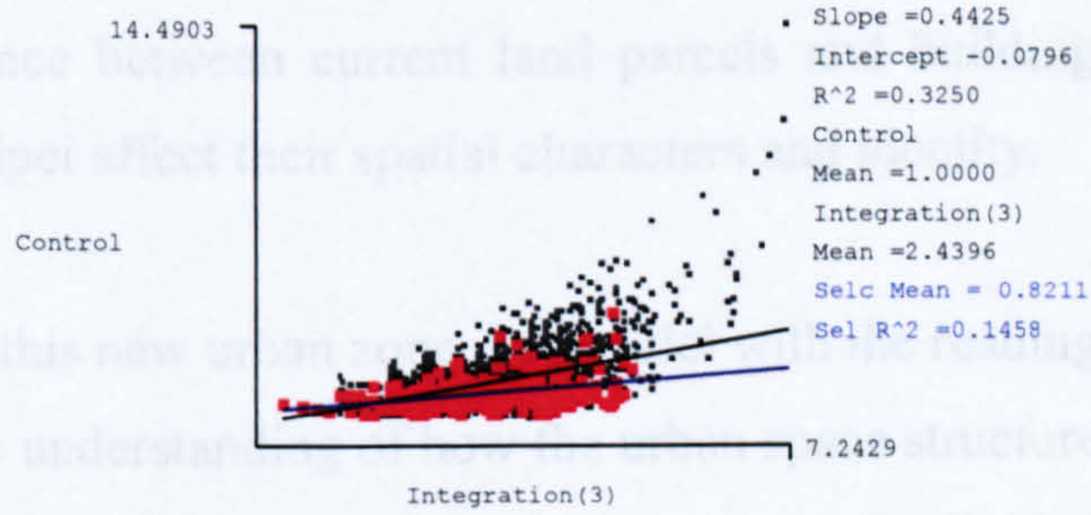
VI) The scattergram of control against radius-n integration



VII) The correlation between connectivity and depth of eastern zone in relation to the city as a whole.



VIII) The correlation between control and connectivity of Eastern zone in relation to the city as a whole.



IX) The correlation between control and radius-3 integration of Eastern zone in relation to Taipei as a whole

Fig.6.6 Scattergrams of Eastern zone (red dots) within the context of Taipei (black dots) in 1998

6.3.1 A Morphological Analysis of Eastern Zone in the Whole City Context

Places are normally understood as 'containers' of specific physical, socio-cultural, and political economic phenomena. However, in contemporary society in the era of hi-tech revolution and globalization, they become more complicated than we thought. The swift transformation of place has caused a great impact on the restructuring of society, and the reproduction of new spatial forms. The transformation is a result of post-colonial political correctness which actually responds to the people's needs in the political specialization of most Far-East countries like Taiwan today. The Eastern zone of Taipei is an example of such particular places that falls into this category of spatial transformation. When we look back at the historical transformation of Taipei, the new Eastern zone is no doubt a product of this historical conjunction. If we contrast the configurational analysis with historical development of the new area, it would be interesting to reveal how the driving force of spatial transformation activates the formation of new spatial pattern, and what deeper meaning of urban forms is embedded within the new configurational pattern.

This new zone started to develop in the late 1960s and is still changing in terms of spatial structure and urban forms. A configurational analysis of contemporary Taipei in 1998 in comparison with the analysis of historical maps before 1960s (See Chapter 4) has highlighted the declining of attractiveness of the old urban cores and the shifting of centrality towards new development. The change has raised debate why urban grid patterns with post-colonial characteristics appearing to be more successful in new urban areas than the old city centre. The spatial analysis also illustrates how the difference between current land parcels and building footprints of the new zone and the old area of Taipei affect their spatial characters and identity.

For instance, the configurational analysis of this new urban zone, in parallel with the reading of its historical development, has given a holistic understanding of how the urban space structure and forms have emerged in a few decades of the post-colonial period, which can be aptly divided into two development stages: the initial planning stage (1960s-1979) and the second stage of development (1980s - present). Major developments of the new Eastern zone are recorded in chronological order in Table 6.1.

Table 6.1: A chronology of major developments in Eastern zone

Timeline	Major Developments
1969	Oituen Mansion --- the first high rise residential building was built in the area.
	Built Jenai Road --- the widest boulevard (100m width at Section 3) in Taipei. It has an average 70m width connecting between Shin Shen South Road at the west and Keelung Road at the east. At that time, it was the major route between the Presidential House and Sungshan Airport.
1970	Built Tunhua Road --- another major boulevard forming a loop to run from Sungshan airport to Jenai Road.
1971	Champagne Court was built --- also known as Dinghou Market (literally super good). It was an upmarket high-rise apartment facing a vast triangular shape open space: Dinghou square.
1973	Built Chunghsiao East Road --- a 30m width road runs at west-east direction to link the old city centre and the new development area.
1974	Built Chunghsiao East Road, Section 4 --- a section running between Kienkuo South Road at the west and Tunhua South Road at the east.
	Hankung and Lungmun mansions were built and more high-rise apartments following the pattern in the area. Most houses and two-storey buildings scattered within the web of alleys were demolished to build seven-storey buildings.
1980-81	A formation of Dinghou commercial domain --- an agglomeration of up-market and service business gathered around this area such as Tong-ling Department Store, cinemas, large fashion outlets like A.T.T., fast food chain restaurants like MacDonald's and Wendy. This commercial hub not only provides a service for the local residents, but also attracts a whole range of people from all over the Taipei metropolitan area. The implementation of Hsinyi Special District was started in 1981.
1984	Tunhua South Road is developed as a major high street of the region and became a shopping paradise for those who would like to buy expensive and fashion stuffs. Developments of several new public-housing villages with high-rise pattern include Cheng Kung New Village (15~19 floors, 2290 units, 102 m² per unit), Dian New Village (13~18 floors, 1240 units, 112m² per unit) and Hsinan New Village (13~15 floors, 1925 units, 108m² per unit). [84]
1993	A complete construction of new Taipei Civic Centre in Hsinyi Special District
1994	The largest Dian Forest Park (259,293m²) of the city was opened to public on March 9. Taipei City Council building was completed for use.
2001	Operation of Taipei Mass Transit Eastern Blue Line (Nankang Line) connecting the area between the Western district and the Eastern district. The opening of two large shopping malls: Breeze Centre and Core Pacific City Mall. [85]

[84] Note: The floor area of old public housing in the old district (the renewal area of Wan-ta Program) is about 47 m² per unit, which is less than half of floor areas in new housing villages. Source: Department of Public Housing, Taipei City Government, 1998.

[85] Core Pacific City Living Mall includes department store, cinema city, hi-tech and amusement theme park, which is 36 times that of Sogo Department Store (42,900m²) and Breeze Centre provides 6,600m² open space with green space, fountain landscape and colourful mosaic floor pattern.

- **The first planning stage (1945-1979): An emergence of new urban pattern**

During the Japanese colonial period Taipei was not yet developed beyond Ginshan South Road. Urban developments were largely concentrated in the fine fabric of old Hsimenting area (Western District). (See Fig.4.19a.) The departure of the Japanese in 1945 followed by the migration of large number of mainlanders in 1949 tremendously increased the population of Taipei. The unexpected immigrants eventually outnumbered the original holding capacity of Taipei Master Plan, which was laid out by the Japanese to supposedly contain only a total population of 500,000. Obviously, the proposed urban dwellings could not match the influx of immigrants. As a result, a lot of illegal dwellings were deliberately constructed without proper planning, mainly scattered around and concentrated in the old city centre of Taipei Basin. At the time, the eastern part of the city was still virgin land and preserved a vast stretch of natural landscape. Only a few isolated farmhouses stood in some of the cultivated lands. The development pattern was obviously a result of the 'ideology and value' of Nationalist Government, which at the earliest period of their governance often emphasized the possibility of an early return to the mainland. This emphasis led to their having only short term thinking about spatial development.

A short-term solution was thus employed to solve the rapid increase in population. Making use of existing vacant residential houses vacated by Japanese was one of the quick and easy solutions to tackle this problem. For this historical reason, a large number of bureaucracies were then organized to move into the south-eastern part of Taipei (i.e., the present areas of the inner walled city, Dian District, and Kuting District), which during the colonial period was the major housing area for Japanese communities. A large infill of mainlanders (*waishenjen*) has made them the dominant group in these areas. That is why the population of *waishenjen* is now over 50 % in most of the new urban areas. In comparison, most Taiwanese live in the old areas; for instance, they occupy about 80% of population in the old Wanhua area.[86]

[86] Source: *The Statistical Abstract Yearbook of Taipei*, 1998.

Fig.6.7 A bird's eye view of Tunhua South Road today
(Source:Department of Information, Taipei City Government)

Fig.6.8 Jenai Road today – is the widest boulevard in Taipei, enclosed by high-rise buildings on both sides.

The political hope of returning to the mainland was fading and became just a slogan in the sixties, as Communist China became a new nuclear power. From this time on, the thinking of the Nationalist Government began to change and new values and ideology were applied to cope with the new political situation. At that time ideas of new plans and proposals flourished for promoting a genuine comprehensive urban development of the capital city: Taipei. Simultaneously, Taiwan also approached a high economic growth with great success in the early seventies. The pressure of city expansion inevitably presented an urgent situation, on one hand, to keep the continuation of economic growth, and on the other hand, to relieve the multiple rate of increasing populations. The expansion of the city from the old centre of the west to the eastern region became a mandatory policy plan, as the further development of the old Western area was obviously constrained by a natural barrier: Tamshui River. Thus, the construction of infrastructures at the east was speeded up, including main thoroughfares such as Chunghsiao East Road Section 3, Chienkuo South and North Road, Tunhua South Road, Fushing South Road, all of which were built in the late sixties. Furthermore, the construction of two grand avenues in 1971, Jenai Road and Tunhua South Road, served as ceremonial roads connecting the Presidential House and the Sungshan international airport. (Fig.6.7 and Fig.6.8)

These new developments generated important axial lines that constructed a distinctive spatial pattern for Taipei's urban landscapes. It could be seen as an analogy of the city beautiful movement that happened in western cities in the late 19th century and early 20th century. By and large, the political intervention by the state was the primary force to guide the formation of those

special ceremonial spaces. The completion of these major infrastructures did make a significant structural change to the areas around Tunhua and Jenai boulevards but most of the areas here were still agricultural before the early seventies. There were only paddy fields with a small number of countryside courtyard houses scattered around, and some American-type houses for the families of American soldiers were also to be found at that time (Hsia, 1987).

In the late seventies, public institutions started to impose new urban development and design guidelines to catalyze the development of the urban fringe and the transformation of old industrial districts in Taipei. For instance, a series of new urban design plans were proposed for the industrial land of old Sungshan Tobacco Factory, which was finally transformed into a large shopping mall in 2001: the Core Pacific City Mall. These urban policies helped to transform the spatial organization and patterns of the city that not only strengthened Taipei itself as a strong leading production base for fulfilling the rapid economic development of Taiwan, but also gave the new urban zone a new role as commanding centre in the 1990s. In conclusion, at this stage the spatial character of this new zone maintained a strong local property, though it was characterized by the new dimension of wider street spaces and the removal of old industrial uses in the area. The new area was still suppressed by the small block patterns of the old areas at the west, reflecting its deeper mean depth in relation to the city as a whole.

• The second development stage (1980s -present): from local to global character

In the second stage of development, the swift development of the eastern zone of Taipei in the 1990s, in comparison with other areas of the city, led to the transformation of the new zone from a character of local property to a strong global context. The phenomenon of this transformation is clearly reflected from the evidence of its shallow structure formation in the urban pattern, namely the decreasing depth value of the new zone from 5.2178 in 1977 (see Table 4.6) to 4.4589 in 1998 (see Fig.6.6 V). The shallow structure of new urban zone indicated the domination of a formal grid with larger block patterns in the area. In the mid-1970s, the major force driving the spatial development had been shifted from the state to private institutional sectors, which seemed to carry out the development, eventually allowing them to accumulate enough capital and relevant skills. Then in the early 1980s, large undeveloped pieces of land located at the fringes of Taipei metropolitan city provided great opportunities. They

became the major capital power to participating directly in the development of most urban spaces in the new Eastern zone. Large, modern, super spatial structure seemed to be their axiom of development. The pressure of globalization forced the city to open a channel of freedom for capital investment in the financial market. For the first time foreign capital was allowed to partake in local property markets, thus matching the timing of the development of the Eastern zone (Hsia, 1987). Under such circumstances new types of urban spaces for commerce, service and new residential land uses were sharply increased to satisfy the needs. As a result, large parcels of lands were required to satisfy the needs of such developments. Global types of urban forms replaced the local context. For instance, the development of Hsinyi Special Area at the east of the city in 1981 was a prominent example of global-type developments (Fig.6.9). Special regulations and guidelines[87] were applied to the area in an attempt to control the physical forms and aesthetic appearance of new developments in the new Eastern zone.

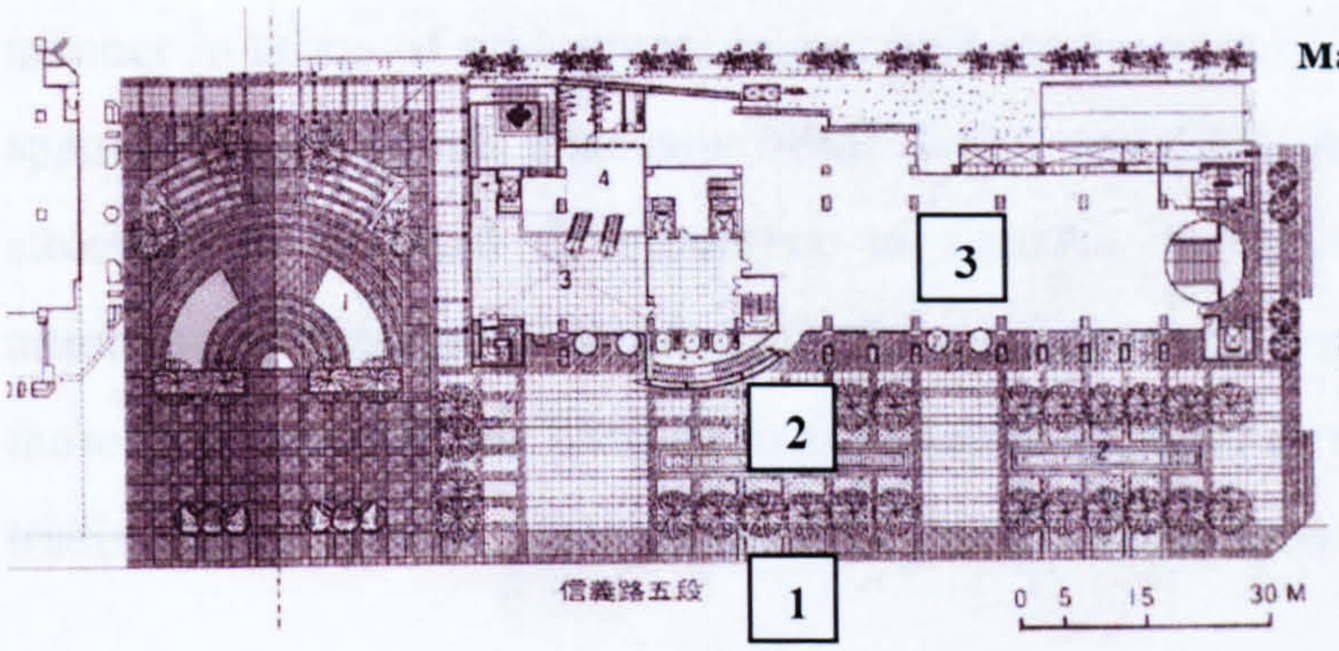
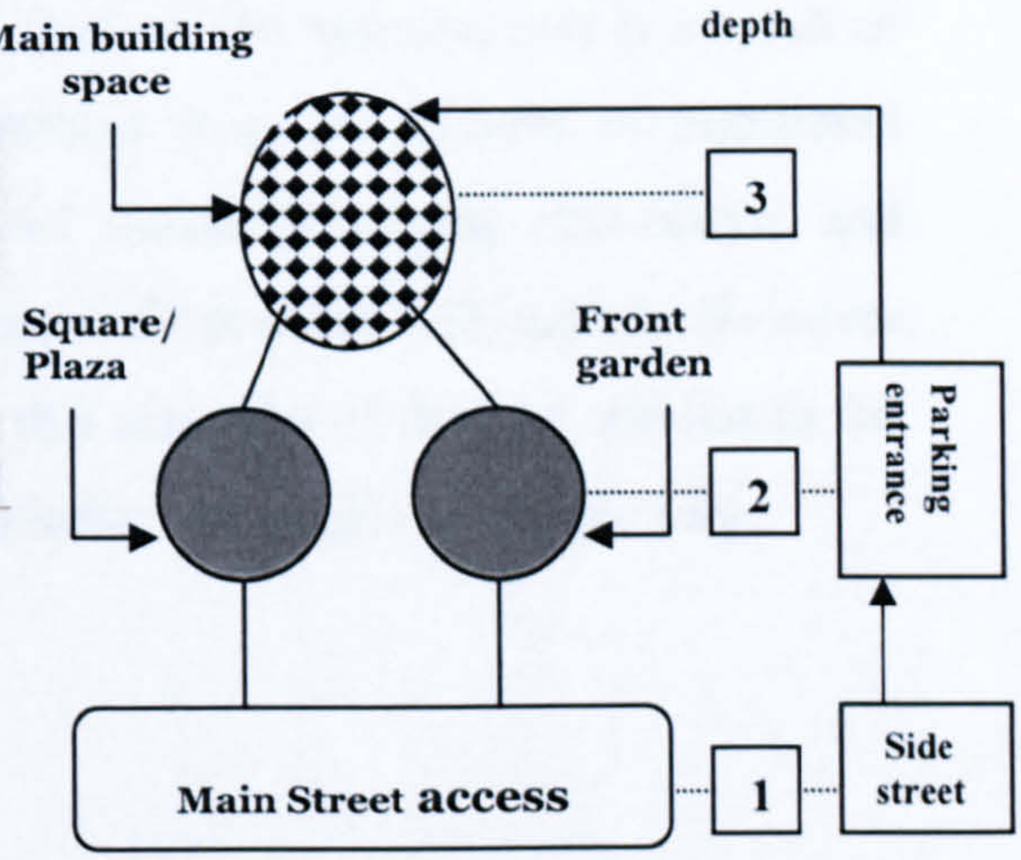


Fig.6.9: The ground floor plan of Taipei Sheng Yang Banking Center occupies the whole block (D4) of Hsinyi Special Area. A global-type development with large public square and open space, which are provided with the plan. A spatial analysis of this global-type building is on the right. (Source: Chinese Architect, Vol. 263, November 1996: p.65.)



A genotype of global-type building in the new eastern urban area

This part of Taipei was in a fast process of transformation, which in just a single decade has dramatically refashioned its economy, society and urban space from a network of local societies situated at remote cultivated lands into a new form of networked societies and local-global urban spaces in the 21st century. Rapid urban development has transformed the fringe

[87] For example, the issue of "Open Space Incentive Plan" to encourage of new large block development in the city has so far allowed developers greater latitude in determining the size and density of their buildings in exchange for increasing the amount of public space.

areas into a centre stage of the city. Global urban forms dominate the new urban area. You can see a number of hi-tech skyscrapers, such as corporate offices and international hotels seeking their corporate identities, as well as high-class residential buildings forming Taipei's new skyline (Fig.6.10). Besides, the formation of large commercial domains have transformed the urban character of the city and also changed the behaviour pattern of people using new commercial urban forms.

Obviously, the new urban forms have evolved from a spectrum of new services, especially shopping and associated consumer services, like giant shopping centres and shopping malls where upmarket designer stores sell jewellery, fashions, CDs and videos, mobile phones and computers with exclusive restaurants and bars or banking and hotels services nearby. It seems that these new spatial patterns are anarchical in nature, as those services are scattered around or lack order in space, though the area is developed in a strongly geometric and highly controlled manner in terms of grid streets layout and zoning system. Indeed, the phenomenon is a result of spatial disconnection. The new urban forms are differentiated from the patterns of traditional streets with oriented development of arcades, privatized plazas, sweeping driveways, and articulated buildings. With this shift, the continuous character of the street is disrupted. However, these new urban forms have risen as important spaces in this new area of the city, similar to the traditional temples as places around which life normally oriented for people in the old time.

Fig.6.10: The global urban forms are common in the new urban area and create a new skyline of Taipei. On the left is Far Eastern Plaza Hotel and Taipei Mall, the middle one is an office building of corporate headquarters, on the right is the largest shopping mall in Taipei: Core Pacific City Mall.

Syntactic properties	Dian	Notes
Total Area (hectare)	1,136.14(4.18%)	It occupies 4.18% of total area of Taipei
Population (persons)	319,003	----------
Male | Female	155,269 | 163,734	----------
Density (per km²)	28,078	----------
No. of households	109,055	----------
Total Plots	28,077	----------
No. of Building sites[88]	20,842	Including lands for temples, shrines and Misc. purpose
No. of park & green field	38	----------
Convex spaces (C)[89]	964	The convex space is defined as the widest space of the open space structure in the city.
Axial lines (L)	990	----------
Buildings	10,432	----------
Islands (I): as a block of continuously buildings completely surrounded by an open space	1000	In this case, parks are not counted even if they occupy the whole block defined by the streets.
Thoroughfares	14	----------
No. of trees	14,264	----------
Deadend/Cul-de-sac	253	directly counted from the base map with scale 1/1000
Thoroughfares/dead-end ratio	0.0553	----------

Table 6.2: Characteristic measures of syntactic properties in the present Dian District (1998)

Measures of convexity	Dian	Notes
Convex articulation	0.0924	Low convex articulation value indicates less break-ups and therefore more spatial synchrony in the urban structure.
Convex deformation of the grid	0.964	If the degree of convex deformation is low, it reflects more geometrical and angular characteristics in its urban structure or vice versa.
Grid convexity	1.1040	If the degree of grid convexity is high, it shows the urban structure has more tendency towards geometrical and angular characteristics.

Table 6.3: A measure of convexity in Dian

Measures of axiality	Dian	Notes
Axial articulation	0.0949	Low value reflects a higher degree of axiality that means there are more continuous linear lines in the urban layout. In contrast, the high value indicates more breaks-up and more twists and turns per unit length within the urban structure of the district, i.e. a reflection of non-axial urban structure, or curves and angles (not geometric) in the open space structure.
Axial integration of convex spaces	1.0270	Low value indicates a higher degree of axial integration in the convex spaces.
Grid axiality	0.0659	is the measure of the comparison of an orthogonal grid with the number of islands, where high value indicates a stronger tendency to a grid structure and axiality or vice verse.

Table 6.4: A measure of axiality in Dian

Numerical properties	Dian	Notes
Convex ringiness	0.5200	It represents the number of rings in the system.
Axial ringiness	0.5063	If the axial map is non-planar, the value of axial ringiness will be higher than the convex value or vice versa.

Table.6.5: A measure of ringiness properties in Dian

[88] Including land for temples, shrines and misc. purpose
[89] The convex space is defined as the widest space of the open space structure in the city.

Syntactic measures	Dian	1998 Taipei	Mean values	Notes
Integration	RA1 Mean=1.5979 RA3 Mean=2.5208	RA1 Mean=0.9417 RA3 Mean=2.4396	RA1 Mean=1.2698 RA3 Mean=2.4802	RA1 is the value of global integration, which counts the lines next to each line in every direction. RA3 is the value of local integration with radius-3, which means the integration is calculated only up to three lines away from each line in every direction. (Smaller RRA values indicate greater integration)
Intelligibility	$R1^2$=0.3217 $R3^2$=0.6608	$R1^2$=0.1393 $R3^2$=0.6207	$R1^2$=0.2305 $R3^2$=0.6408	It is the relationship of connectivity and integration in urban areas, i.e.: R^2, connectivity/ integration ($0<x<1$). Dian area has a higher intelligibility than Taipei as a whole.
R^2 (The coefficient of R3/R1)	R3/R1=0.5993	R3/R1=0.3579	R3/R1=0.4786	The relationship of local integration and global integration in urban areas. The local effect is stronger in the city than in the district itself at the level of Rn/R1.
Mean depth	4.8768	8.1621	6.51945	The mean depth shows that each line in the system has a certain minimum average line 'depth' from all other lines, which is not necessarily a function of distance.90

Table 6.6: A comparison of integration, intelligibility and mean depth values between Dian and the city of Taipei in 1998

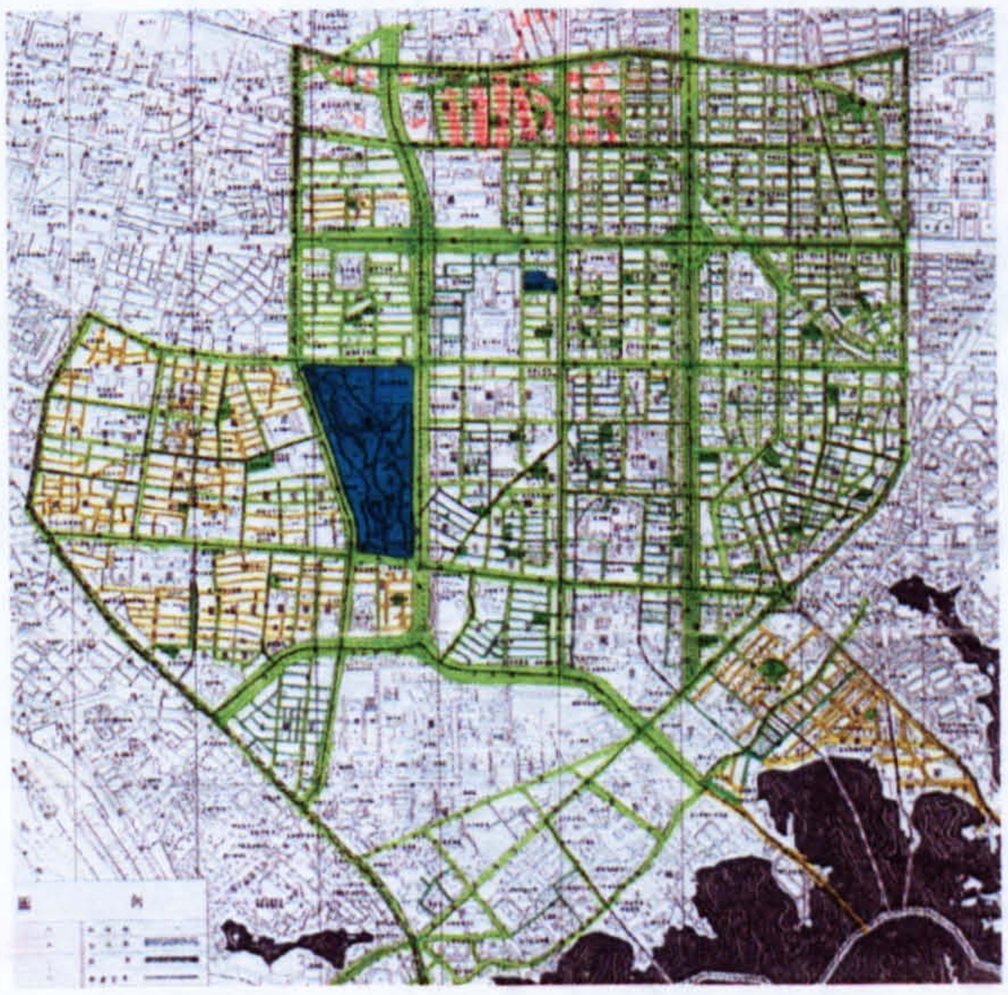


Fig.6.11: The open space system of Dian district
(Source: Base map is redrawn from Land Department, Taipei City Government, S: 1/10000, 1998.)

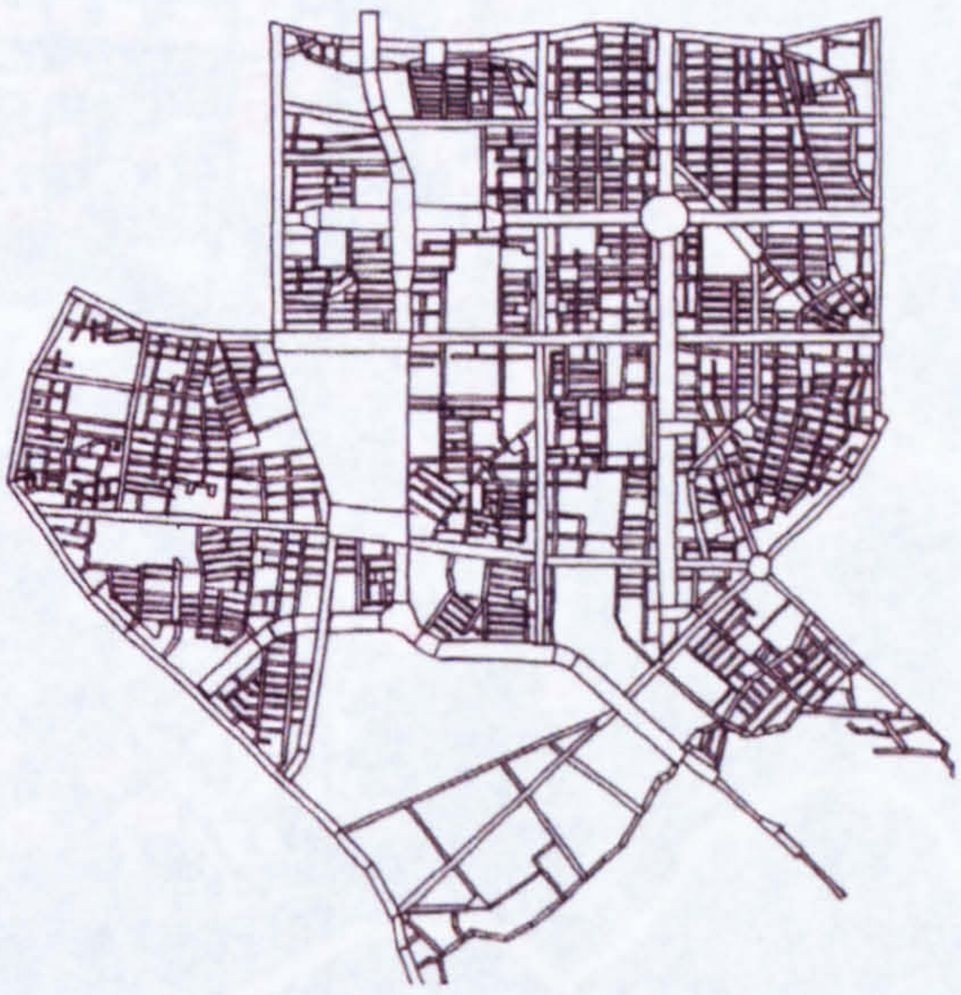


Fig.6.12: The transcription of convex space (total= 964) from the public open space

90 See Hillier, 1996:160.

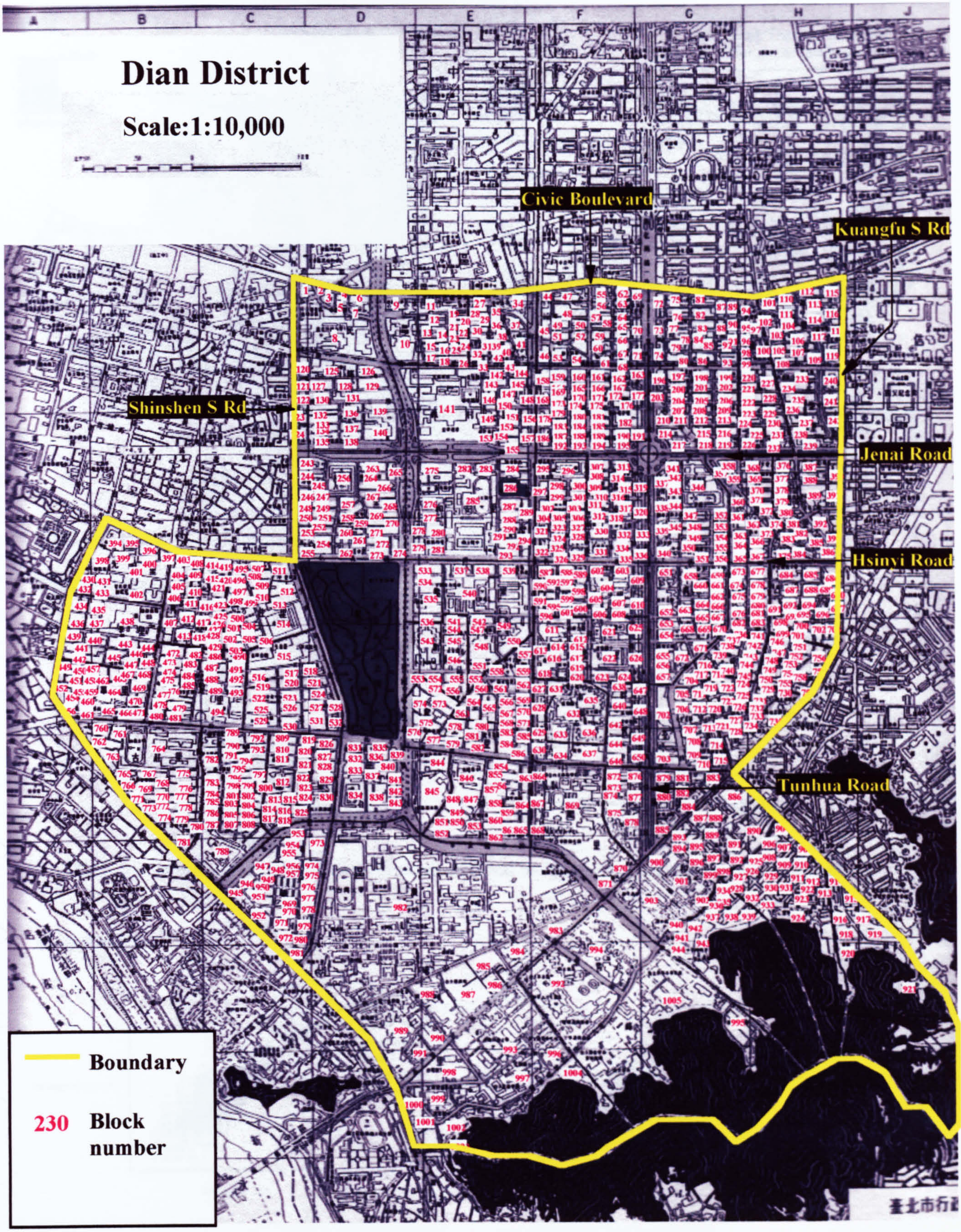


Fig.6.13: Total number of islands in Dian District : 1005

Source: Base map is redrawn from Land Department, Taipei City Government, S:1/10000,1998

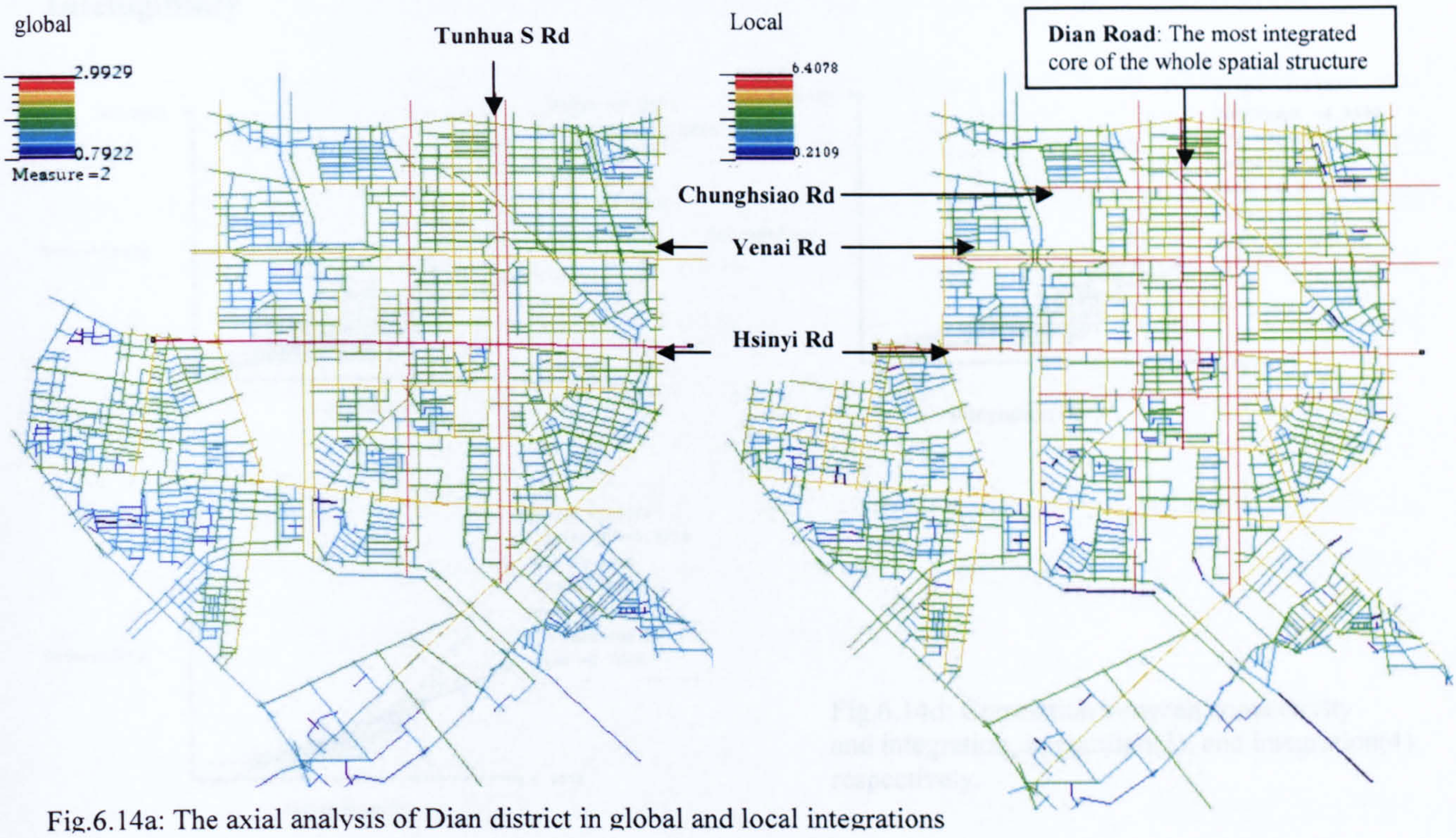


Fig.6.14a: The axial analysis of Dian district in global and local integrations

Depth Values

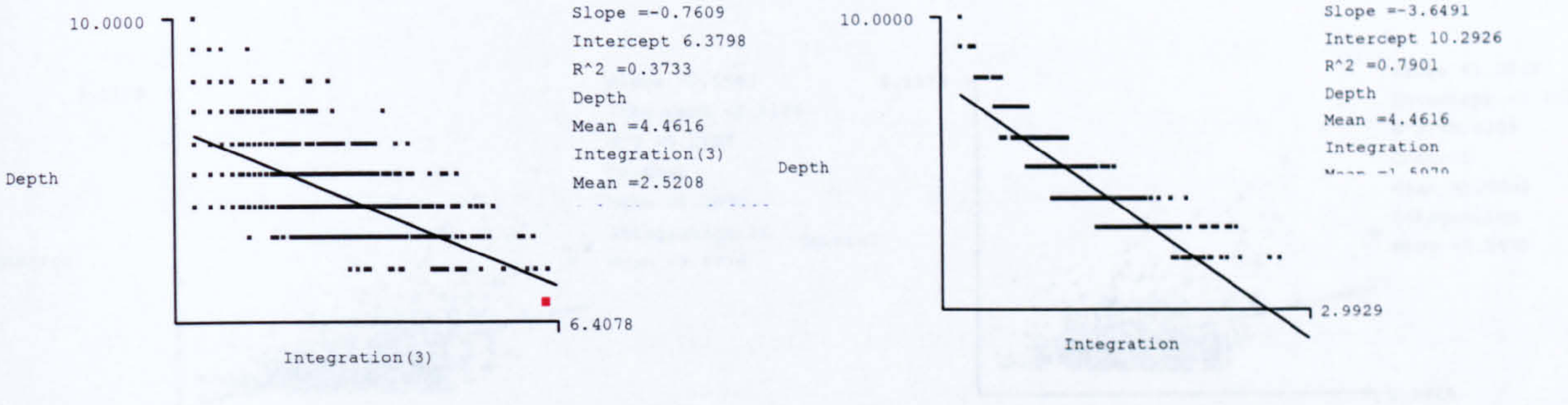


Fig.6.14b: A study of correlation between depth and local integration and global integration respectively

Integration

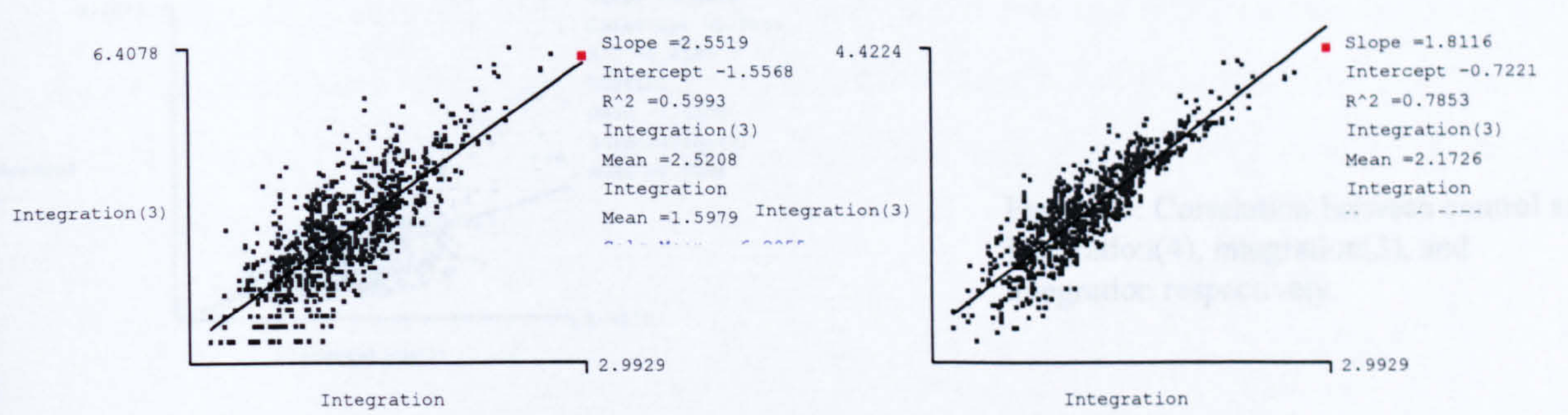


Fig.6.14c: Scattergrams of correlation between local integration (rad-3) and global integration (rad-n)

Intelligibility

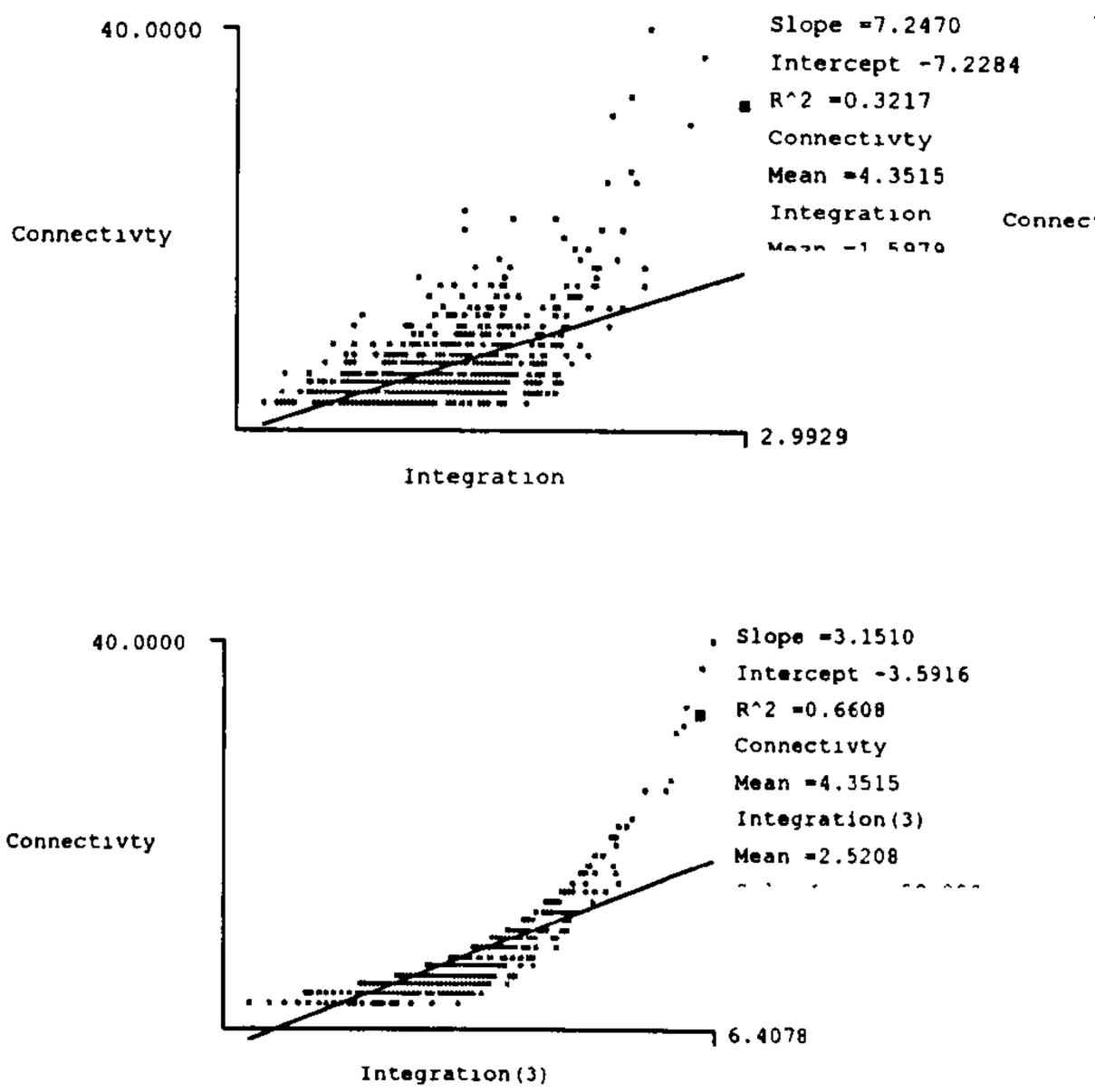


Fig.6.14d: Correlation between connectivity and integration, integration(3), and integration(4) respectively.

Control

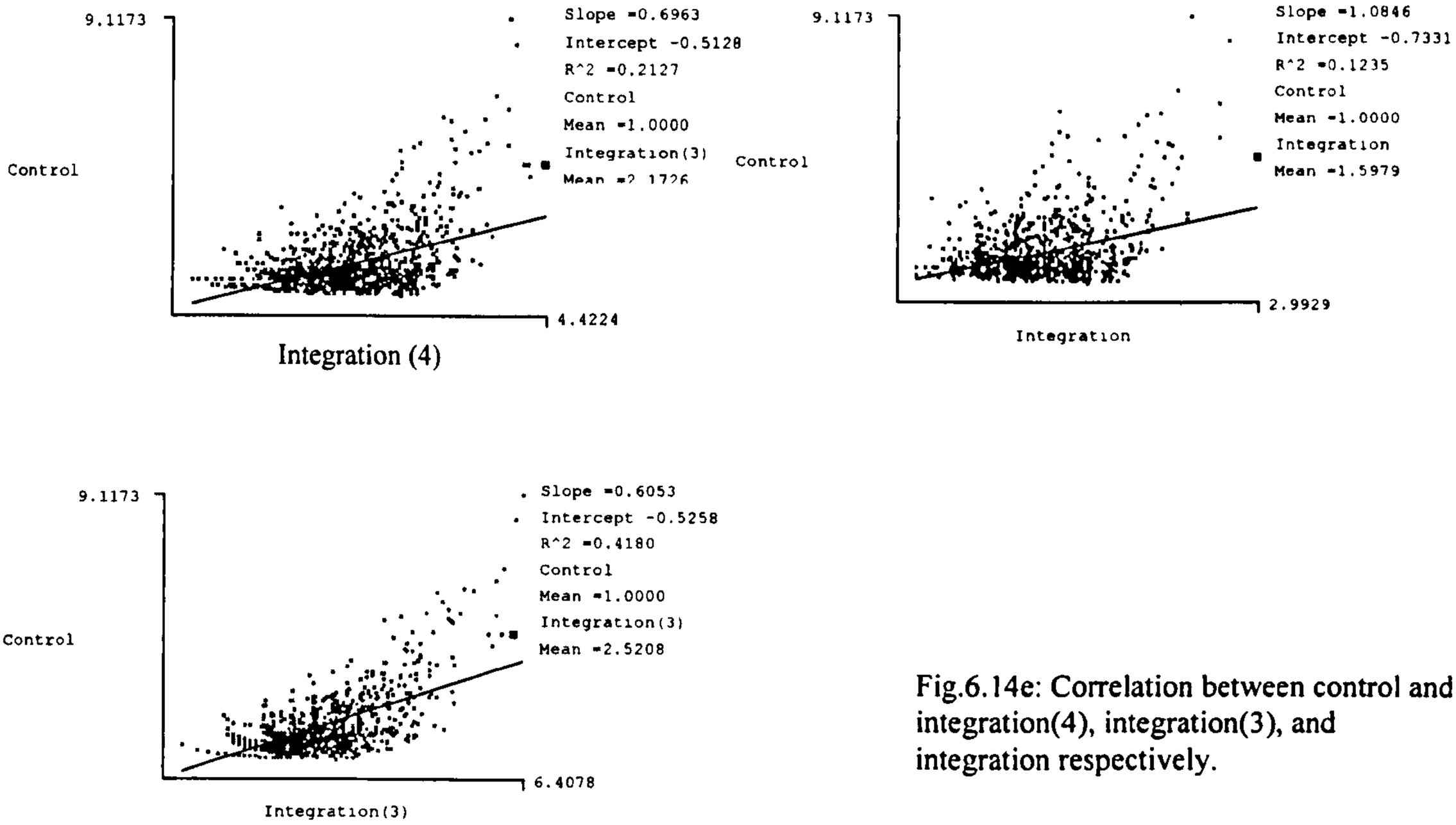


Fig.6.14e: Correlation between control and integration(4), integration(3), and integration respectively.

6.3.2 Specific Characteristics of Urban Space in the new urban area of Eastern zone

The specific characteristics of urban space in Eastern district are reflected from the analysis of syntax properties such as depth values, integration and intelligibility[91]. (See Fig.6.14a~e.) The statistical significance of these syntax analyses delivers specific meanings and implication to the spatial configuration of new urban area that point out the difference from the old Western centre. In addition, it further agrees with evidence of historical records that the new zone is developed in a strongly geometric and highly controlled manner with global spatial morphology.

According to the result of spatial analysis, the changes in syntactic properties of the city are obvious when the new urban area is expanded to the east in the latest stage. It has been drawn up with two interdependent characteristics of this new area.

1) It has a relative smaller depth of globally integrated structure in comparison with the whole city and the old Wanhua district {4.8768 against 8.1621 (see Table 6.6) and 6.1164 (see Table 5.6) respectively}. This statistic reflects a stronger sense of permeability in the new urban area.
2) It has distinctive regularity and repetition in comparison with the complex and deformed grid patterns in the old city centre, as reflected from the lower value of convex deformation of the grid (0.964 against 1.8821 in old Wanhua district) and the higher value of grid convexity for the Eastern zone (1.104 against 0.5795 in old Wanhua district).

It is further proved by the analysis of axial articulation, which is defined by numbers of axial lines divided by numbers of buildings. The lower value (0.0949) reflects a higher degree of axiality (there are more continuous linear lines in the urban layout), and contrasts with the higher value (0.1127) of the old urban centre which shows more breaks-up and more twists and turns per unit length within the urban structure. (See Table 6.4 and 5.9.) Social patterns are also identified in the uses and appropriations in relation to these two characteristics. They refer to the concrete sense of events, actions, and interactions that take place at various urban public spaces in the quarters of Eastern district.

[91] Refer to previous chapters 3 and 4 for the meanings and definitions of these properties.

- **The Spatial Hierarchy of Quarters and Social Pattern**

At first sight, it is acknowledged that the modern gridiron layout is a common pattern in this new district. The typical dimension of each quarter is about 500m x 400m with average block size at 45m x 95m which composes the skeletal structure of new spatial pattern. However, the analytical results of the grid structure of Dian district, as shown in the area integration maps (Figure 6.14a), have further revealed that the quarters in this new urban area are formed by two hierarchical spatial systems. The first system is the formation of supergrid structure by major vertical and horizontal street spaces. The second system is the inner blocks of local areas which are surrounded by supergrid spaces. It appears that both systems have one factor in common. That is, they all represent areas with shallower spatial structure in relation to obvious strong supergrid pattern, though the first system is shallower than the second.

The axial analysis allows us to understand that the first hierarchical system dominates the whole configuration of the new urban area, which may affect rates of pedestrian occupation in the public space of local areas. (Evidence is shown in the case study of Dinghou area in the ensuing section.) This is because shallower spaces (in this case supergrid spaces) are better to attract people in terms of permeability and accessibility in relation to the city as a whole. For example, Chunghsiao East Road Section 4 is shallow because of its position on the supergrid network that seems to be used as a locally important space, functionally highly integrated with the local area itself as indicated in the scattergrams (Fig.6.19b and d). It is a shopping street that serves not only the population of the adjacent local areas, but also people from outer regions who access it via the supergrid. The evidence on the ground is clear with its good accessibility from the rest of the city, which reflects why the agglomeration of four major occupational uses are concentrated here as a whole: 17 non-retail shops, 5 large outlets, 72 chain retail stores, and 37 single retail shops that make the street itself an attractor for people.[92] However, the monotonous repetitive pattern of the whole structure creates a loss of orientation; it is difficult to enjoy walking through the area.

[92] The statistic of these occupational uses is based on actual counting in collaboration with Eastern District Christmas Map, issued in December 1998 by MDA Taipei, during on-site survey.

In the old Western city centre, people are drawn to the experience of the intimate, narrow streets filled with people and dotted with small squares (temple) and plazas. On the contrary, the Eastern zone is divided into larger scale of quarters, which are constituted with specific nodes of the new urban area. These nodes contain mixed uses spatial activities in a disorderly scattering within the new zone. They do have one common feature, namely they are all adjacent to the supergrid spaces. The high level of direct contact of these spatial nodes of local inner areas with the crossing supergrid spaces is reflected in the point-depth map (see Figure 6.15 to 6.19).

The range of the values of mean depth of these nodes varies from 2.5 to 4.8 relative to the most local integration core (Dian Road), as evidence shows that Dian Road connects to and constitutes the main squares (Dinghou square and Lungmun Square) of the whole system {i.e. the most integrated line reflected in the local integration (Rad-3) map, Fig. 6.14a}. The nodes of mixed-use spaces reflect their shallower properties. It is clear that lines with high value (25%) of local integration (the red lines in the axial map) are dispersed over the entire district to form a shallower depth of supergrid spatial pattern. The representation of these shallower spaces shows that social and cultural change is taking place in tune with changing spatial structure which is related to block-size and orientation. It indicates that our changing daily lives have been closely associated with the inverted spatial organization which has caused people to move from deeper spaces of inner blocks area to the shallower spaces of major streets.

The hierarchical spatial system has clearly indicated that two levels of social pattern appear within the context of whole new urban area in the east. The two levels imply the concept of two social paradigms of space, spatial and transpatial,[93] suggested by Hillier and Hanson (1984) to explain this phenomenon. People who move in this area are basically the high-income groups and families, who can afford the high land value of this area. They belong to a group that is defined by the conceptual linkage and cohesion because of their shared value of ideology[94] instead of spatial contiguity. In this sense, we might call them a transpatial group. In the case of new Eastern zone, the inner blocks of the local area occupied by this transpatial group indicate

[93] According to Hillier and Hanson (1984:222), transpatiality refers to the 'ideological superstructure' and it means building into patterns of space and action complexes of non-interchangeable relations.

[94] This transpatial group shares the same ideology here actually not derived from a cultural ground of expression, such as the practice of cosmic order or feng-shui principles or the same belief and value from close kinship and clan, but indeed is primarily based on a form of capital or market value that determines their social status in the present post-colonial society.

its distinctive social pattern with a sense of virtual strong spatial boundaries. But it is different from the formation of the traditional early settlement which was primarily based on the social relations in the form of close kinship and clan networks, as in the case of the old Wanhua area. At the same time, a different pattern of socio-spatial formation appears on major vertical and horizontal streets' supergrid spaces where there are high degrees of mutual interaction among different social groups such as retailers, shoppers, pedestrian, and local residents, in contrast to the inner blocks.

In conclusion, today larger parcels assembled for bigger development movements typically characterize most of the super-blocks at the east of the city. The increasing scale of development, combined with the varied renovations and modernizations of the last forty years, makes differing styles and scales with a heterogeneous context, which reflects the difference between tradition and modernity, between local and global in the context of the city as a whole. The quarters are characterized by the new architecture of shopping malls and policed pedestrian malls in contrast with the overwhelming security system of an up-market residential complex that reflects a striking physical mirror of the social separation. Developments here seem to favour a particular social group, as they tend to be limited to a narrow band of income.

1. Sogo quarter (mean depth = 2.5):

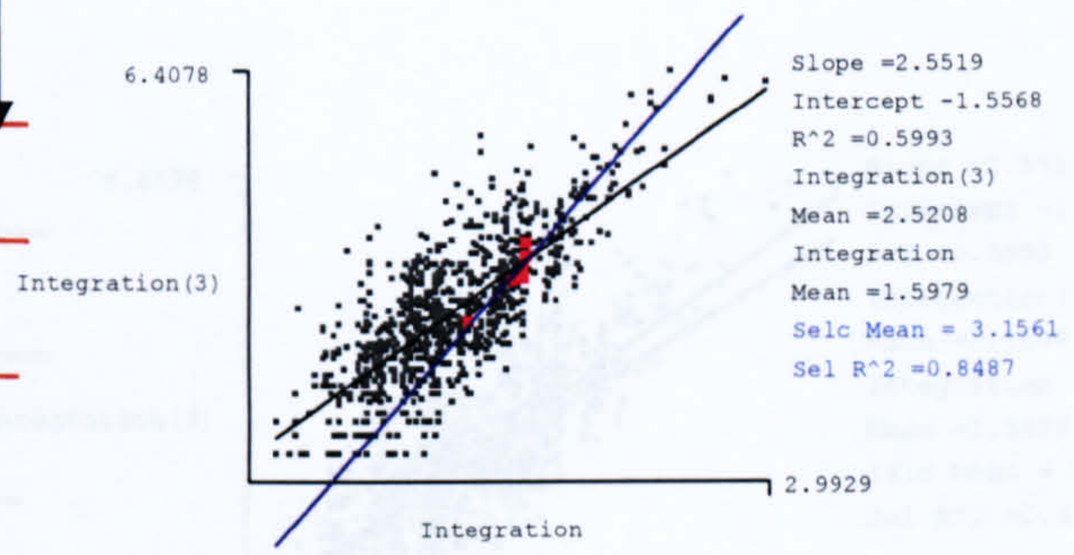


Fig.6.15b: Correlation between integration (rad-3) and integration (rad-n) of Sogo quarter within the context of Dian District.

Fig. 6.15a: Point depth map of Sogo quarter (the black dotted area) within the whole context of Dian district

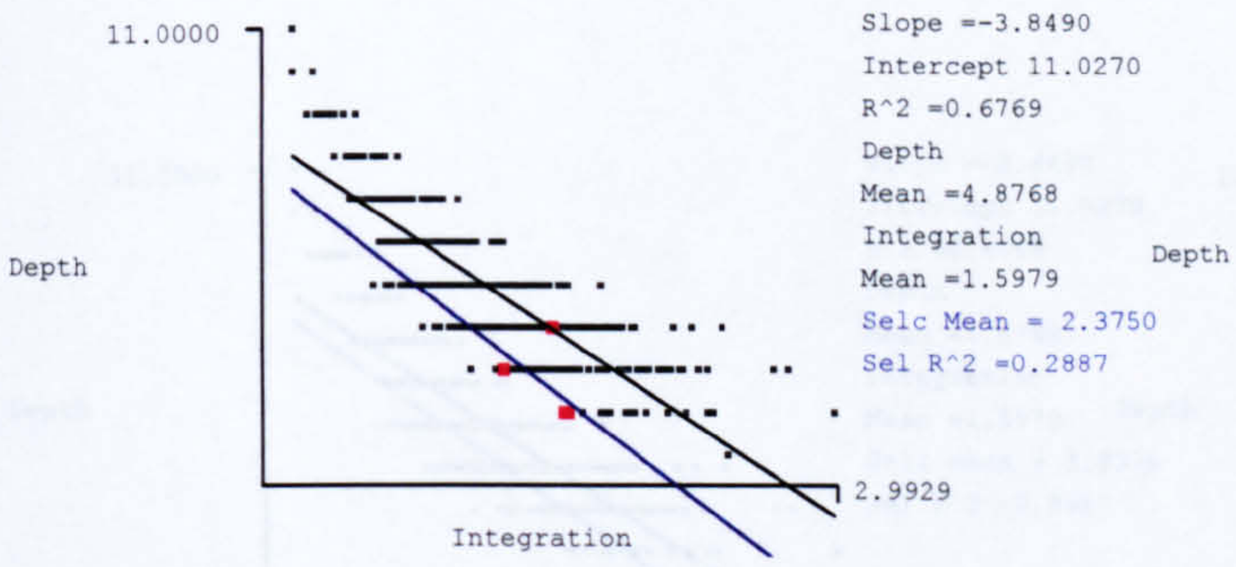


Fig.6.15c: Correlation between depth and integration (radius-n) of Sogo quarter within the context of Dian

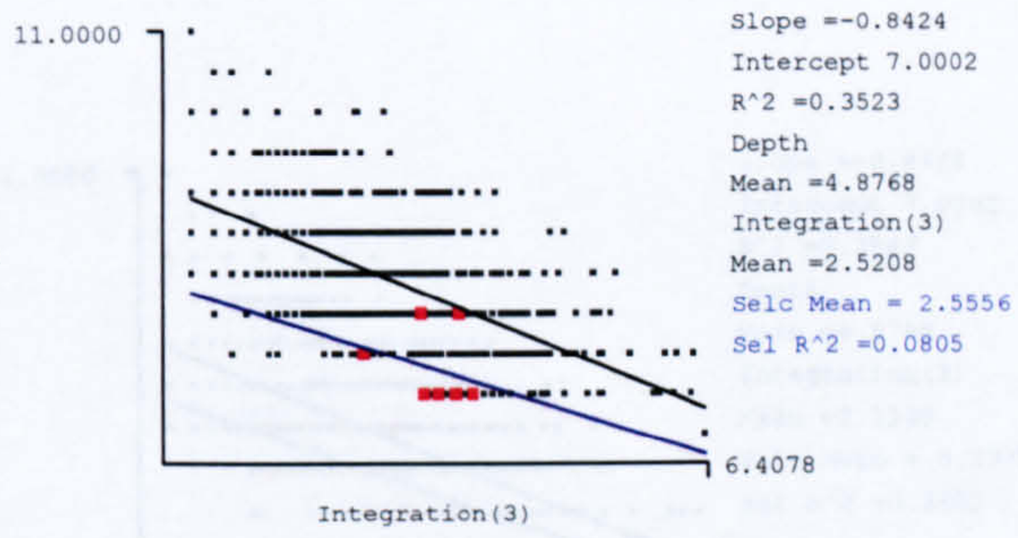
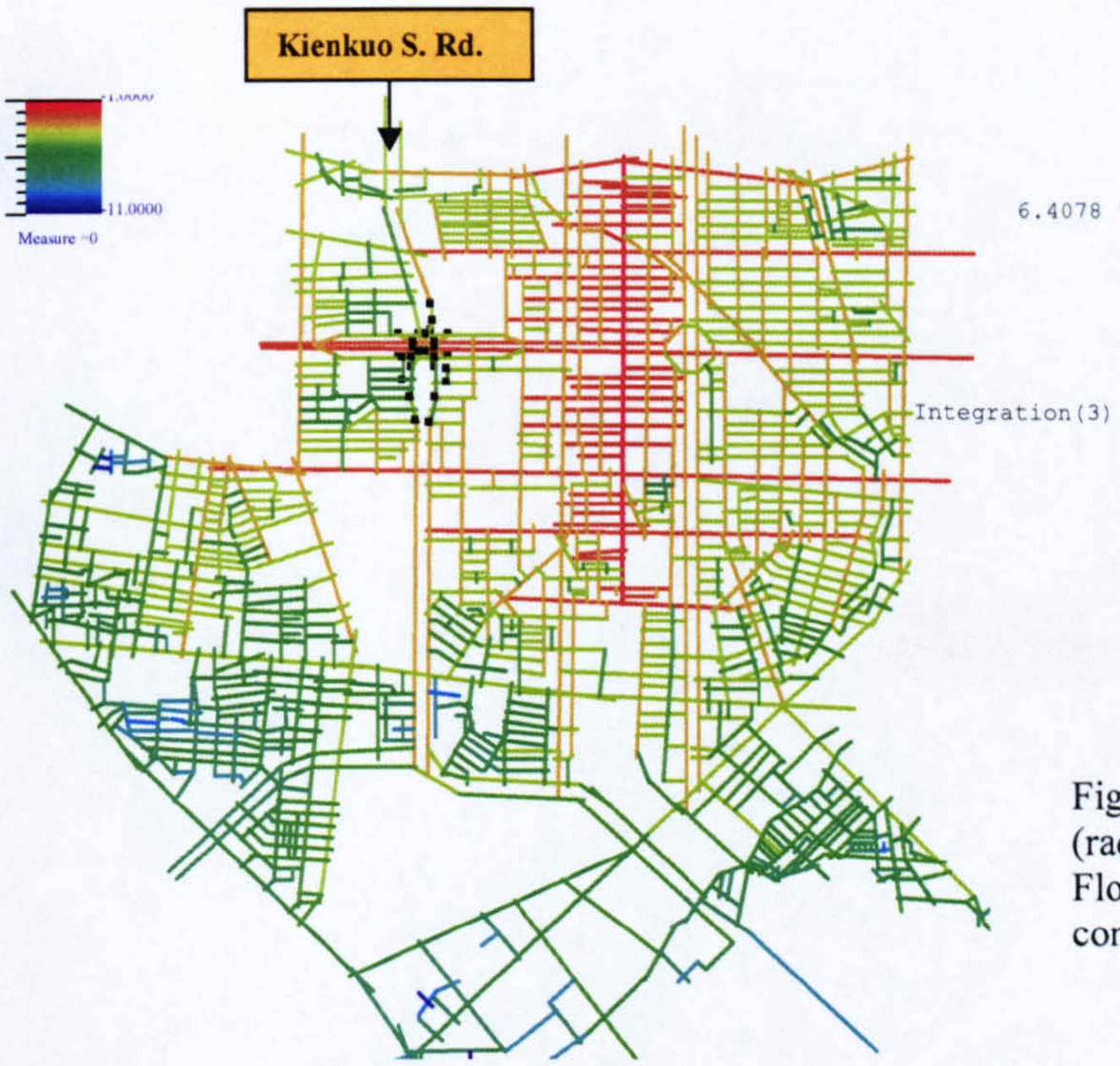


Fig.6.15d: Correlation between depth and integration (rad-3) of Sogo Quarter within the context of Dian district

2. Kienkuo Flower open market (mean depth = 4)



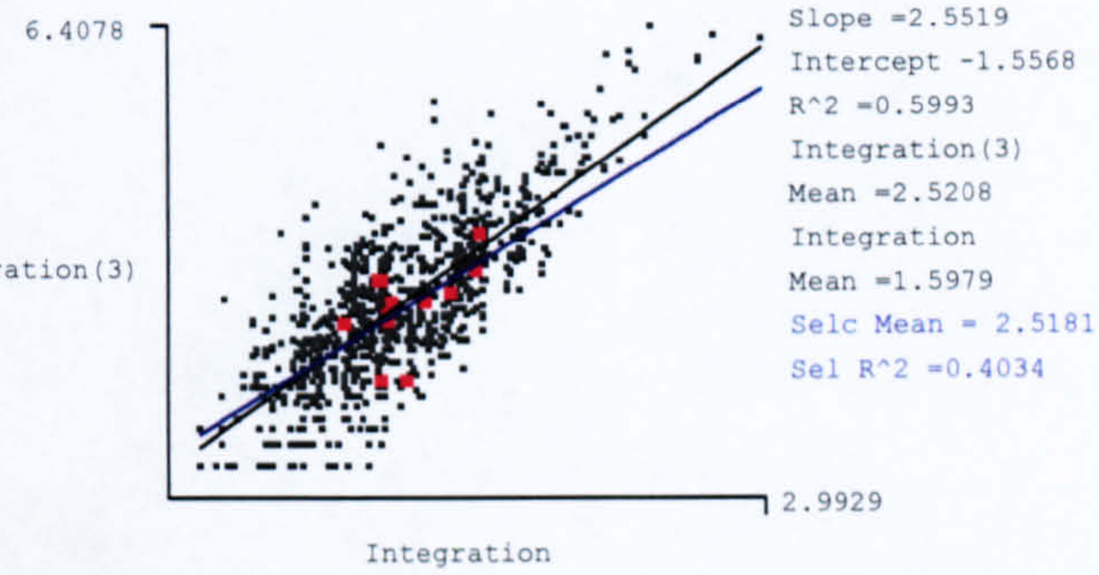


Fig.6.16b: Correlation between integration (rad-3) and integration (rad-n) of Kienkuo Flower Open Market (the red dots) within the context of Dian District.

Fig.6.16a: Point depth map of Kienkuo Flower Open Market (the black dotted area) within the whole context of Dian district

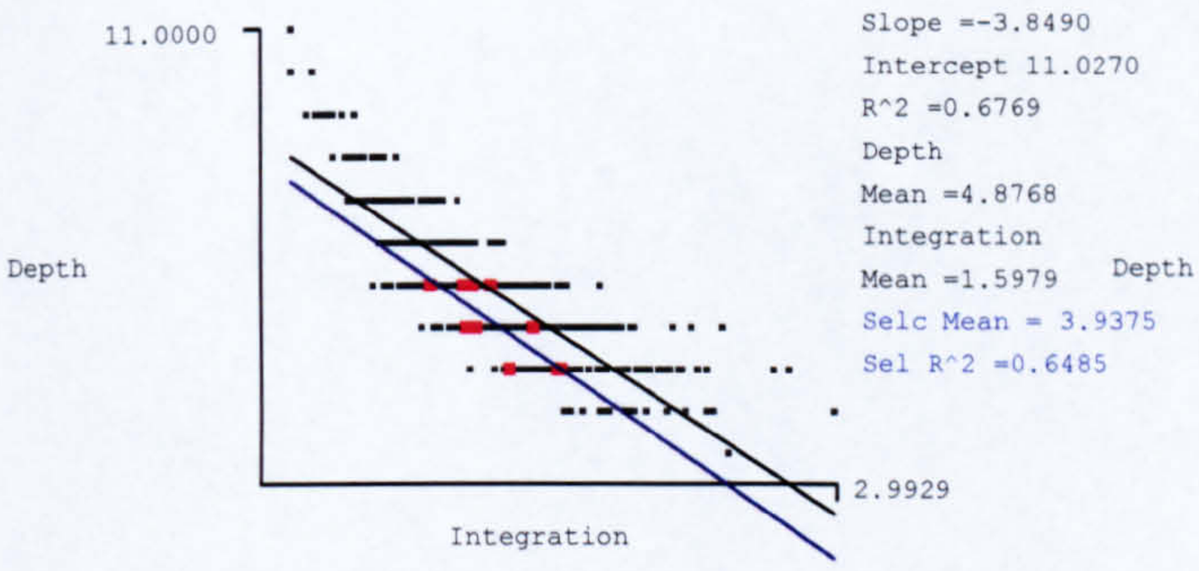


Fig.6.16c: Correlation between depth and integration (radius-n) of Kienkuo Flower Open market within the context of Dian District

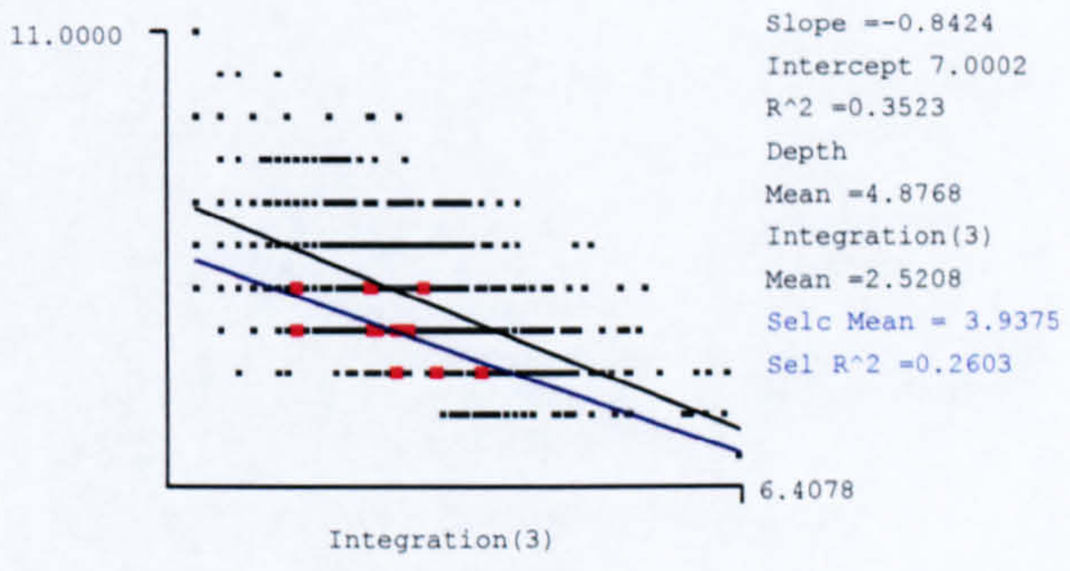
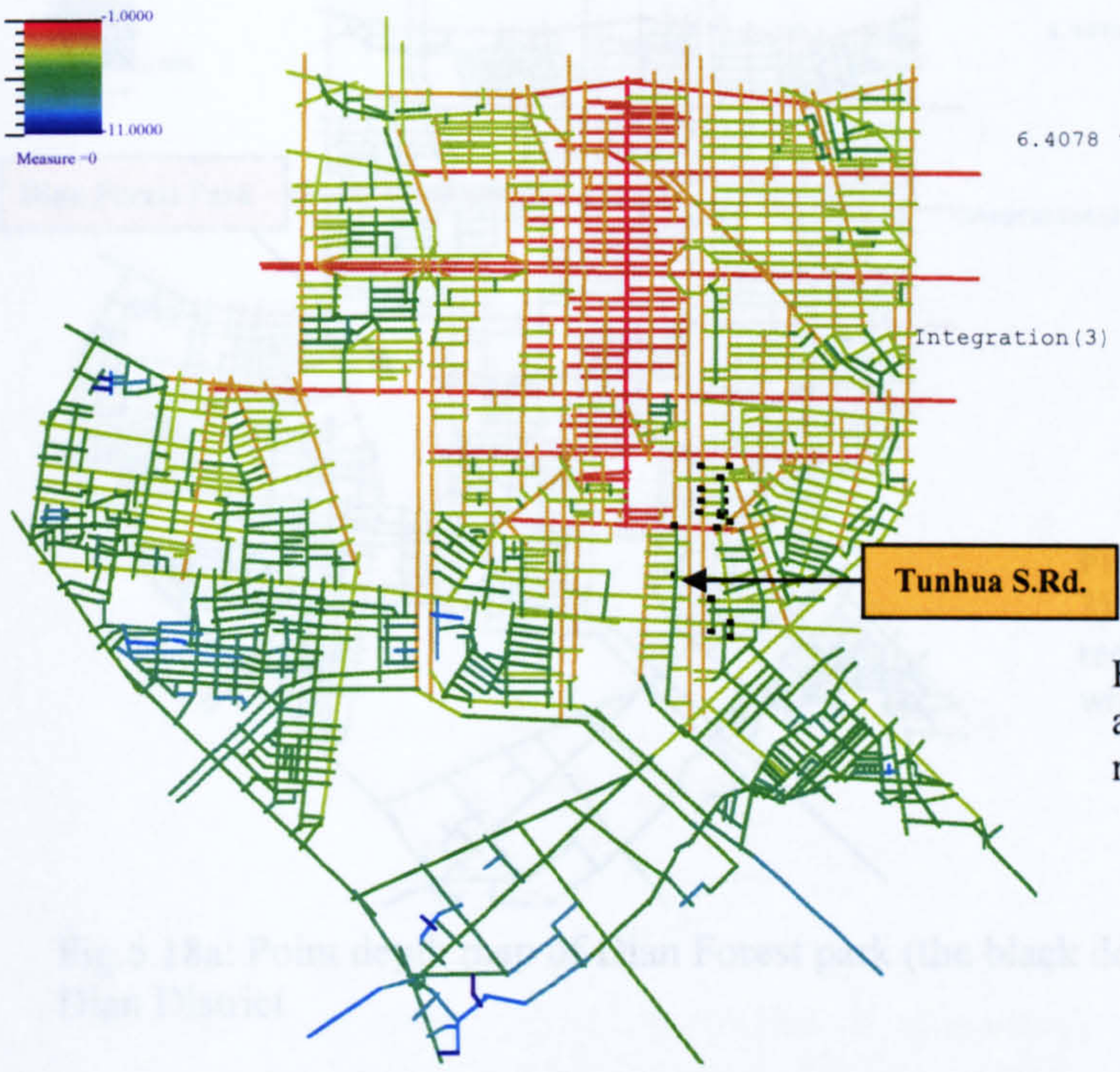


Fig.6.16d: Correlation between depth and integration (rad-3) of Kienkuo Flower Open Market within the context of Dian District

3. Far Eastern Plaza (mean depth = 4.4)



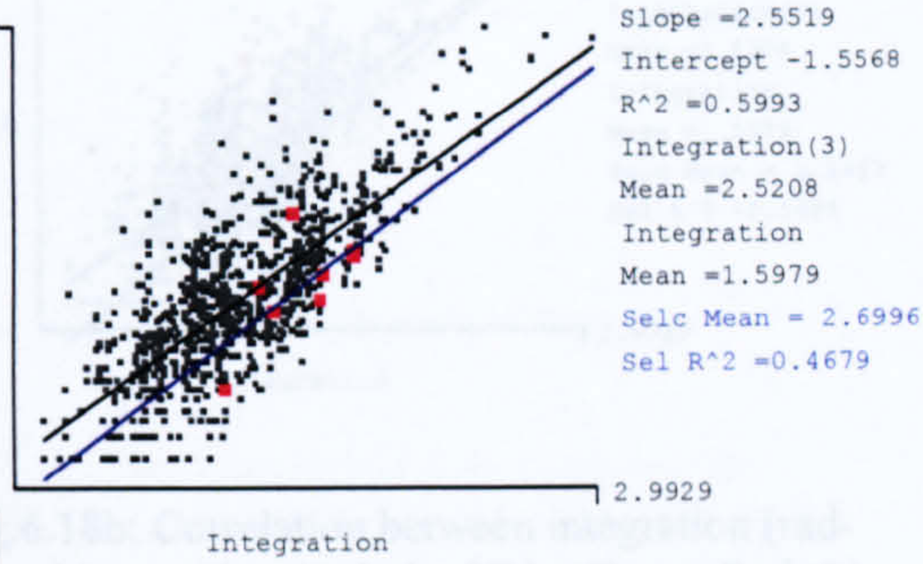


Fig.6.17b: Correlation between integration (rad-3) and integration (rad-n) of the Far Eastern Plaza (the red dots) within the context of Dian District as a

Fig.6. 17a: Point depth analysis of the Far Eastern Plaza (the black dotted area) within the whole context of Dian district

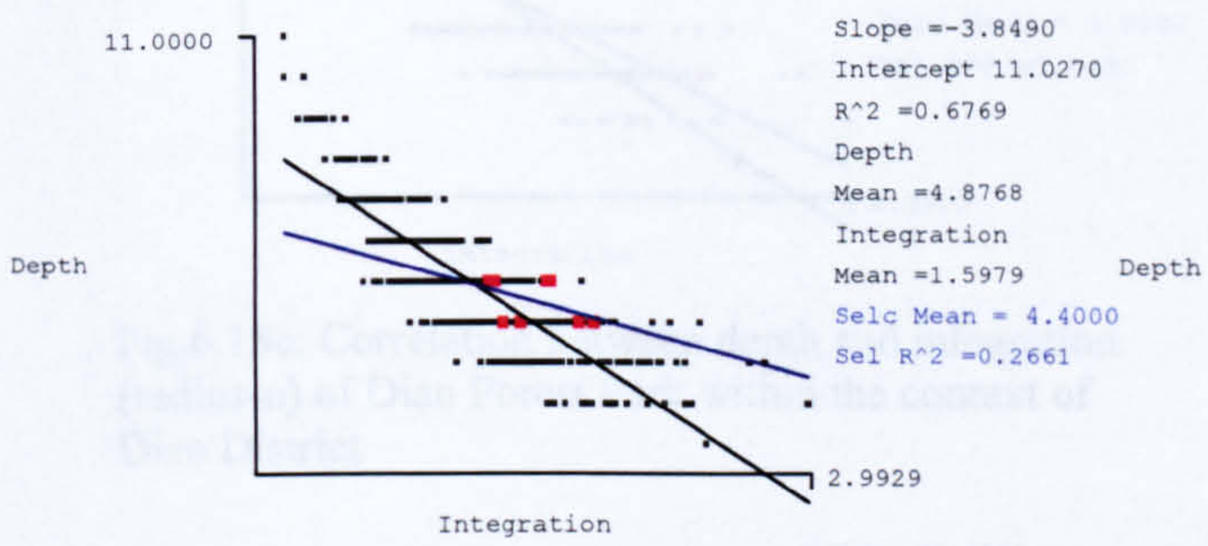


Fig.6.17c: Correlation between depth and integration (radius-n) of Far Eastern Plaza within the context of Dian District

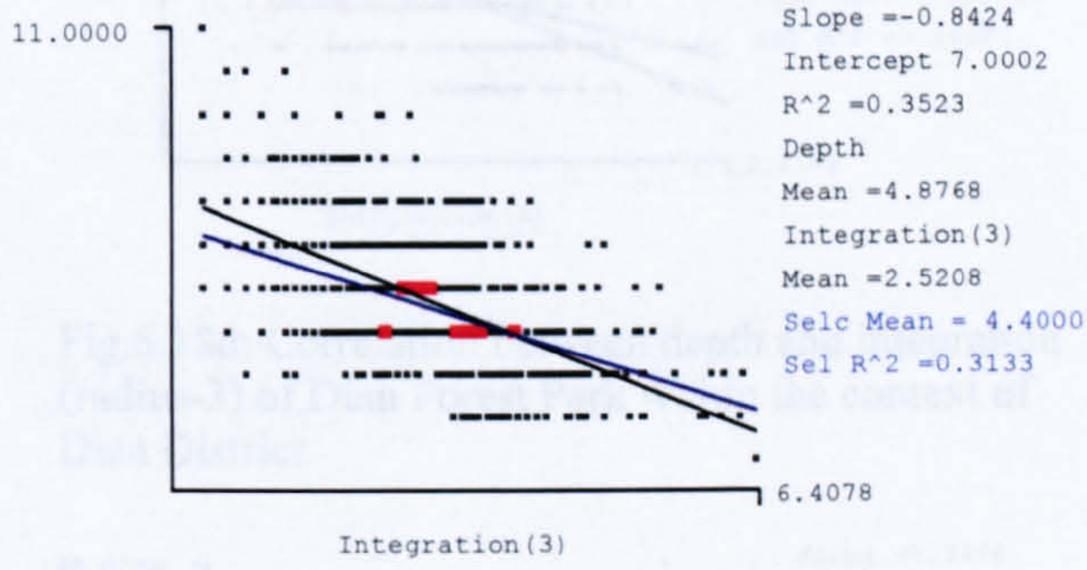
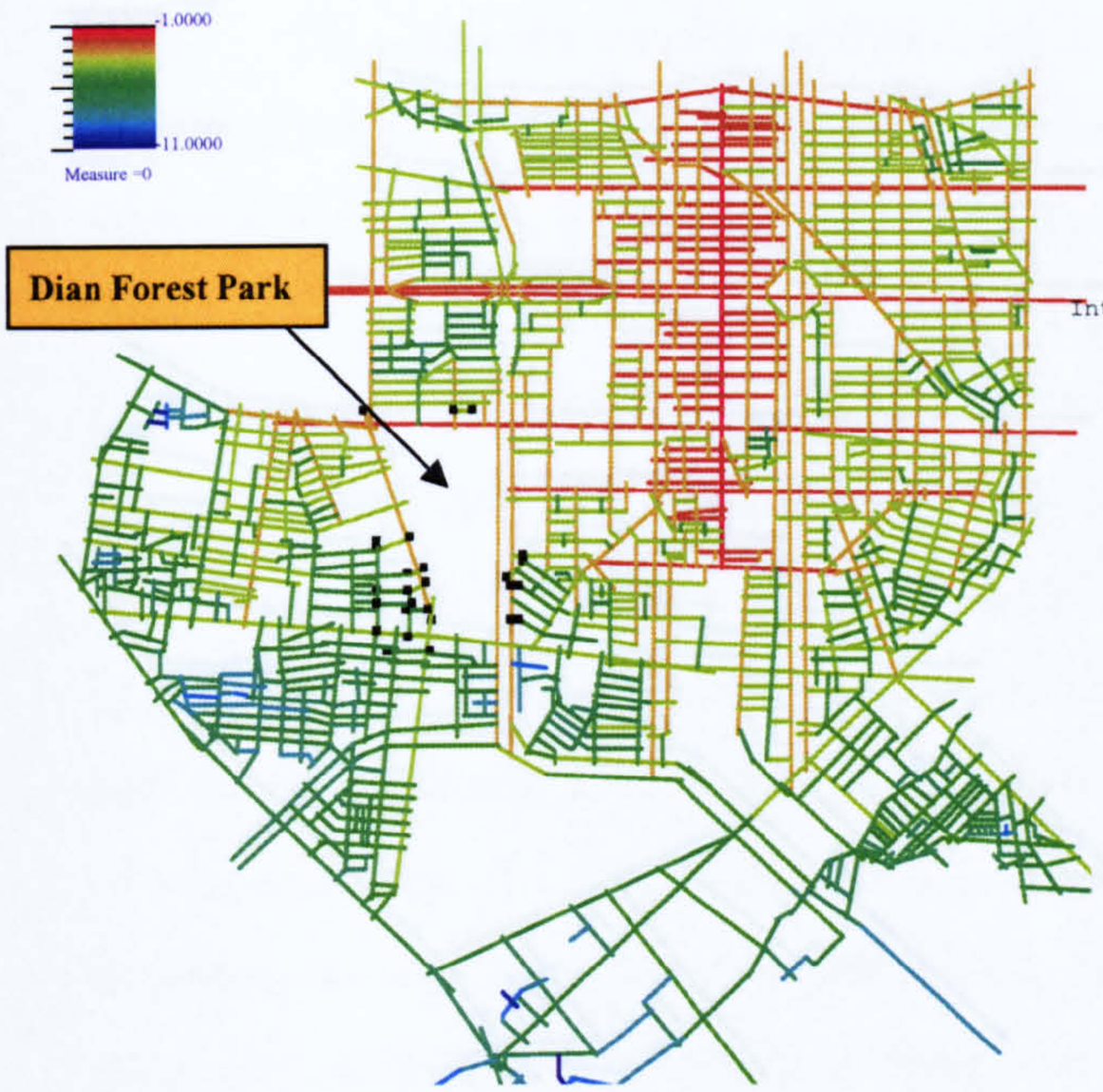


Fig.6.17d: Correlation between depth and integration (rad-3) of Far Eastern Plaza area within the context of Dian District

4. Dian Forest Park (mean depth = 4.8)



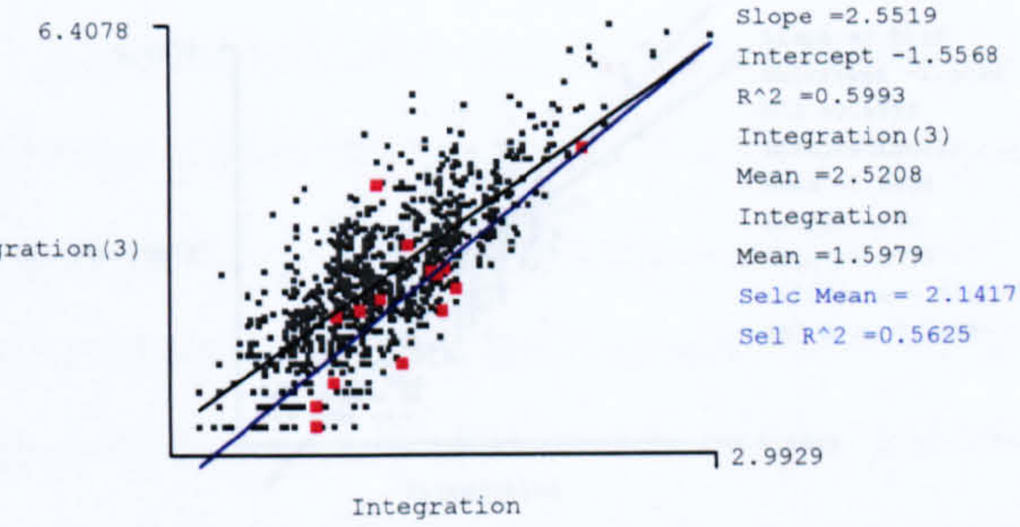


Fig.6.18b: Correlation between integration (rad-3) and integration (rad-n) of Dian Forest Park (the red dots) within the context of Dian District as a whole.

Fig.6.18a: Point depth map of Dian Forest park (the black dotted area) within the whole context of Dian District

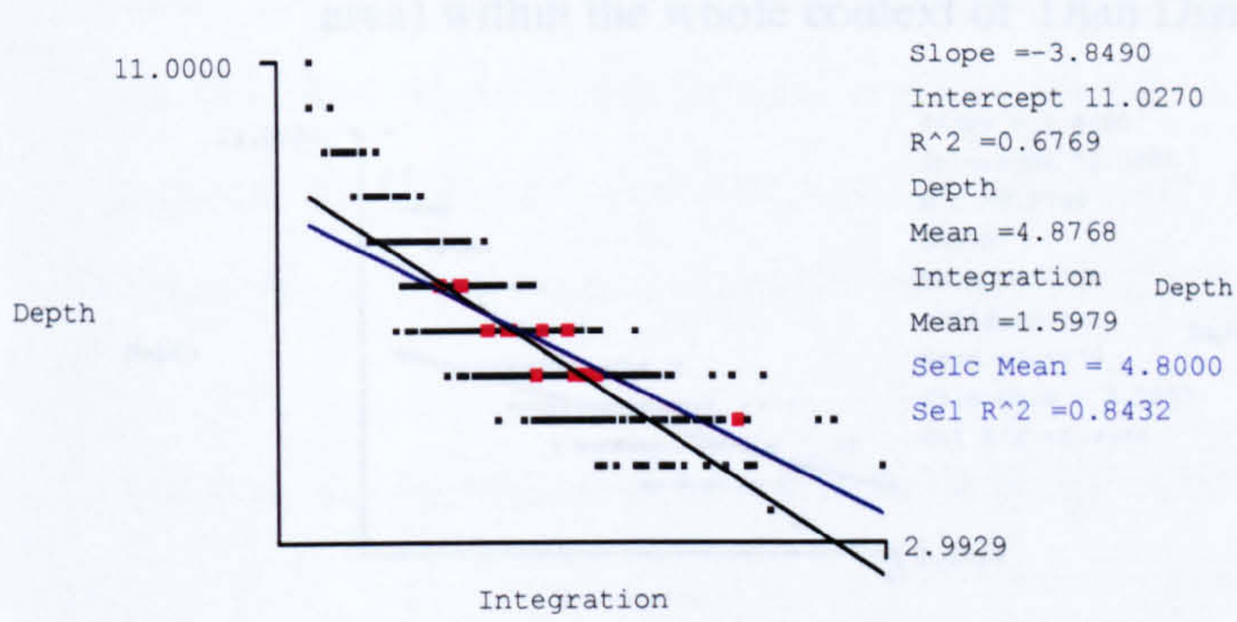


Fig.6.18c: Correlation between depth and integration (radius-n) of Dian Forest Park within the context of Dian District

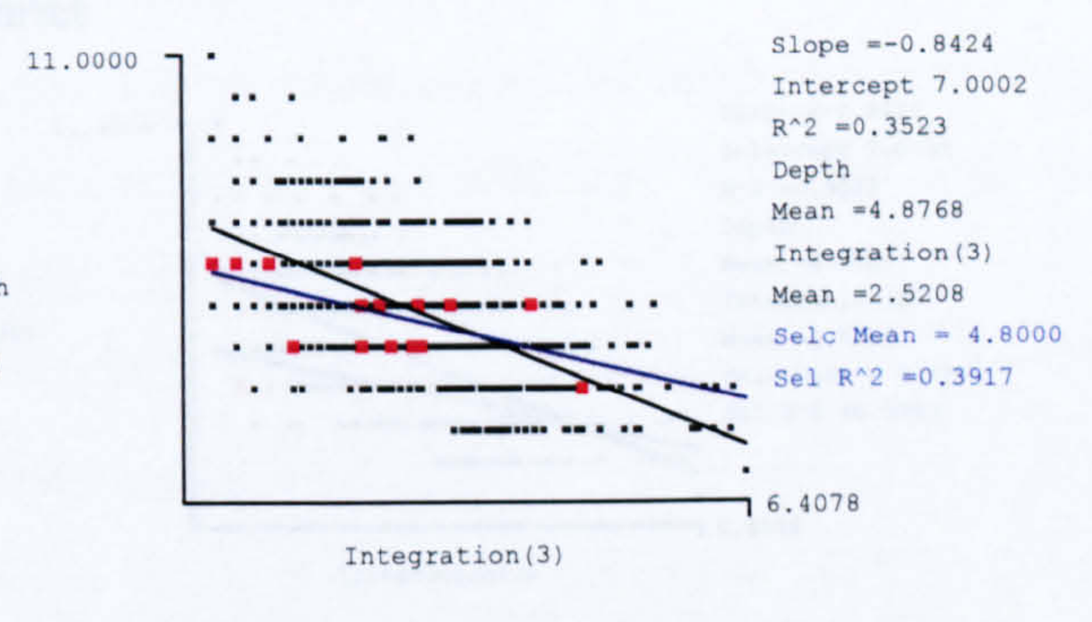


Fig.6.18d: Correlation between depth and integration (radius-3) of Dian Forest Park within the context of Dian District

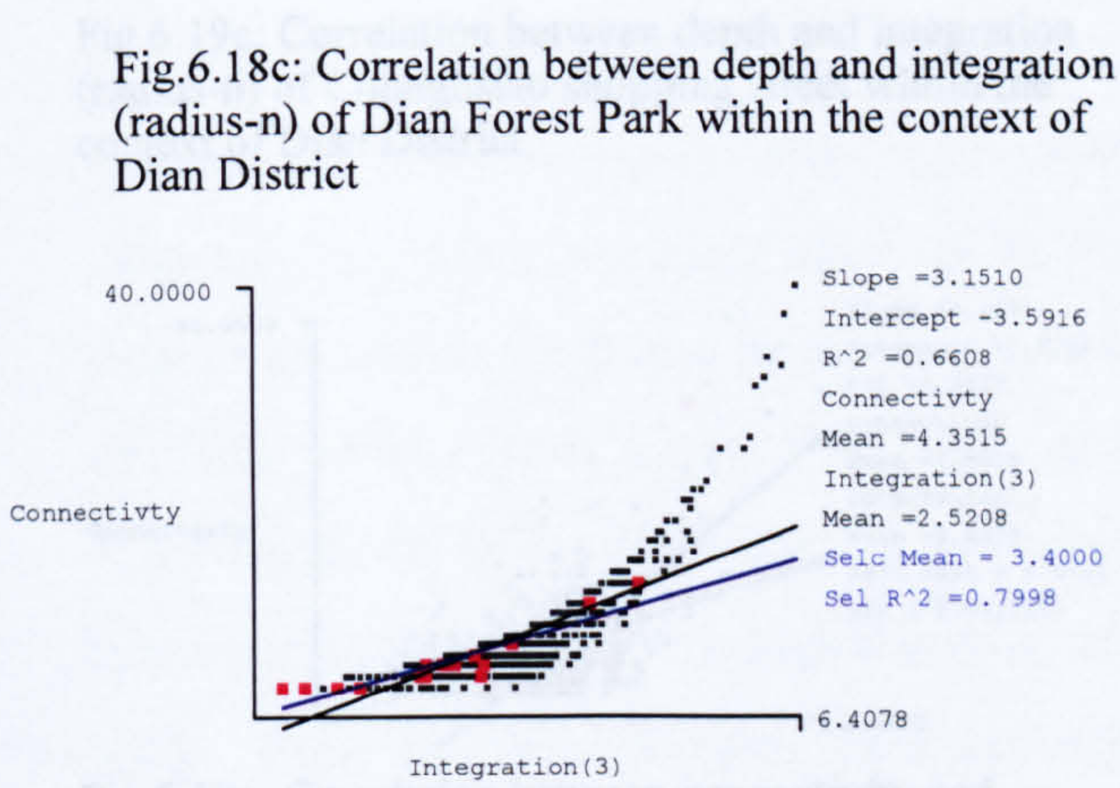


Fig.6.18e: Correlation between connectivity and integration (radius-3) of Dian Forest Park that indicates a high intelligibility of local integrated area in the whole Dian District (R^2 = 0.7998)

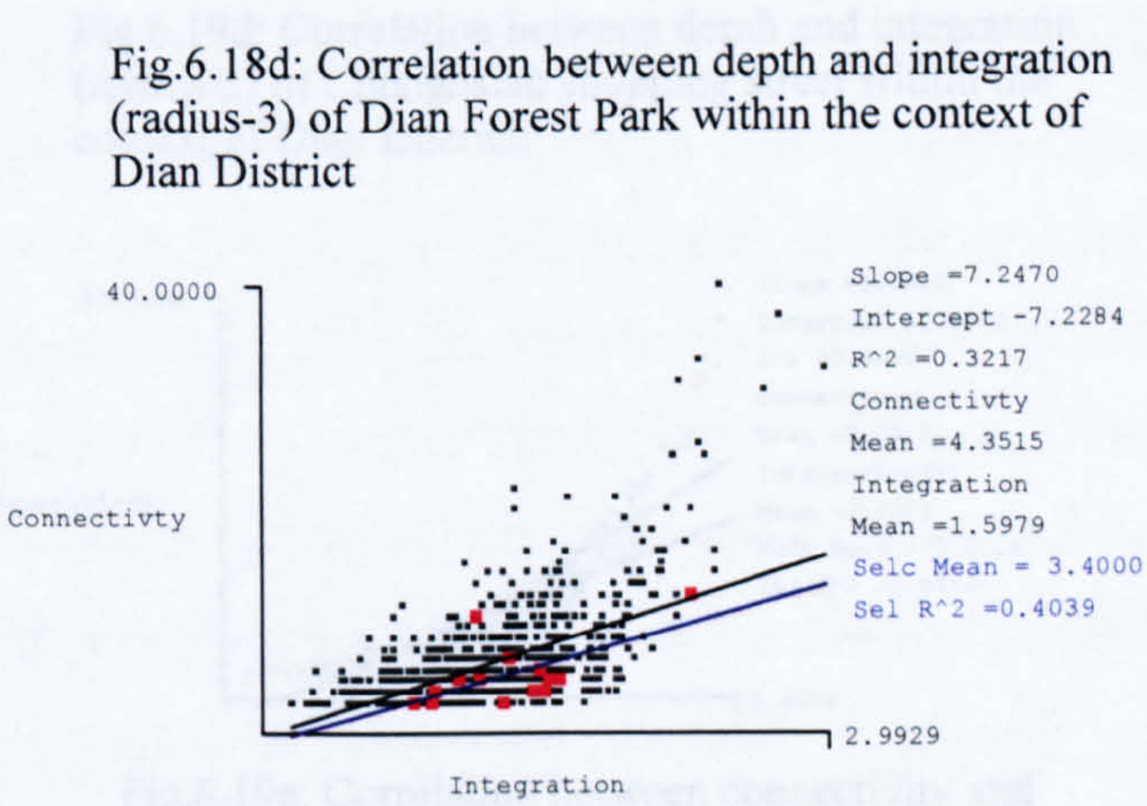


Fig.6.18f: Correlation between connectivity and integration (radius-n) of Dian Forest Park in the whole Dian District

5. Shopping Street – Chunghsiao East Road Section 4

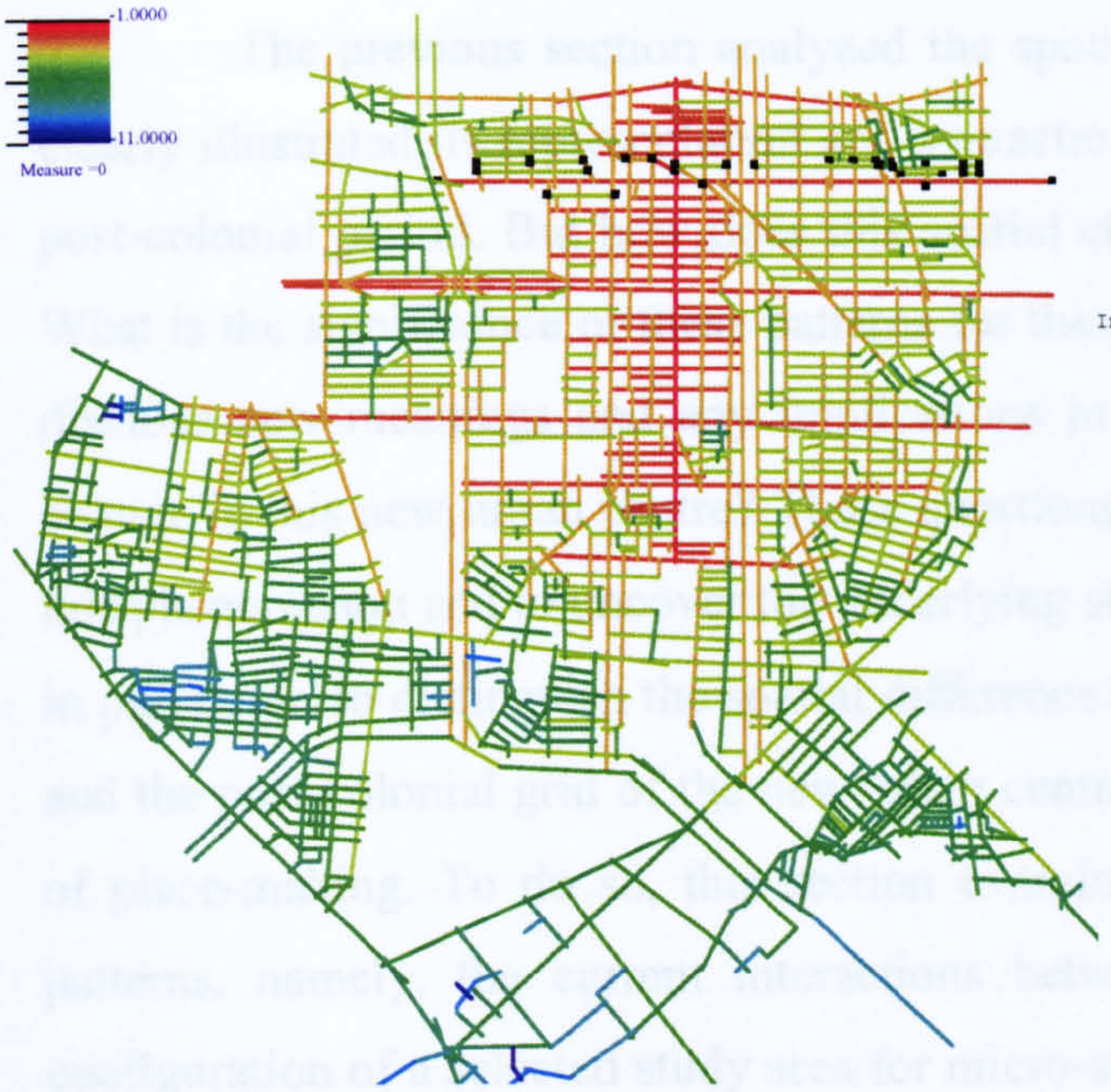


Fig.6.19a: Point depth map of Chunghsiao shopping street area (the black dotted area) within the whole context of Dian District

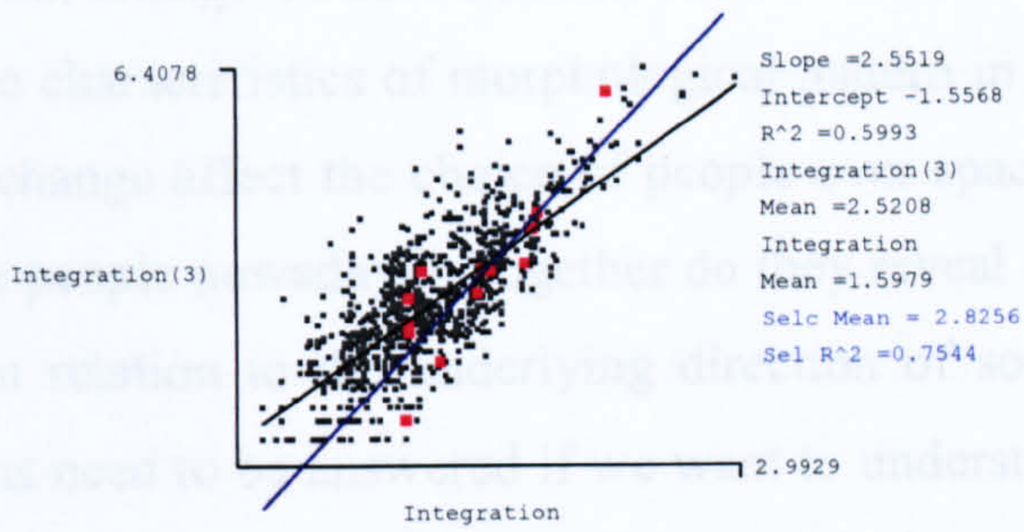


Fig.6.19b: Correlation between integration (rad-3) and integration (rad-n) of Chunghsiao shopping street (the red dots) within the whole context of Dian District.

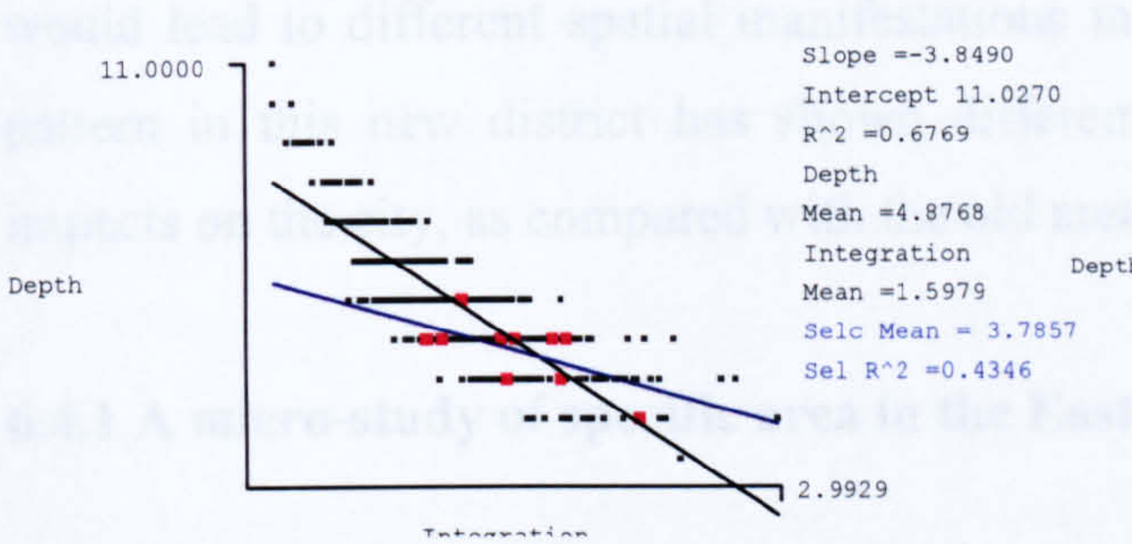


Fig.6.19c: Correlation between depth and integration (radius-n) of Chunghsiao shopping street within the context of Dian District

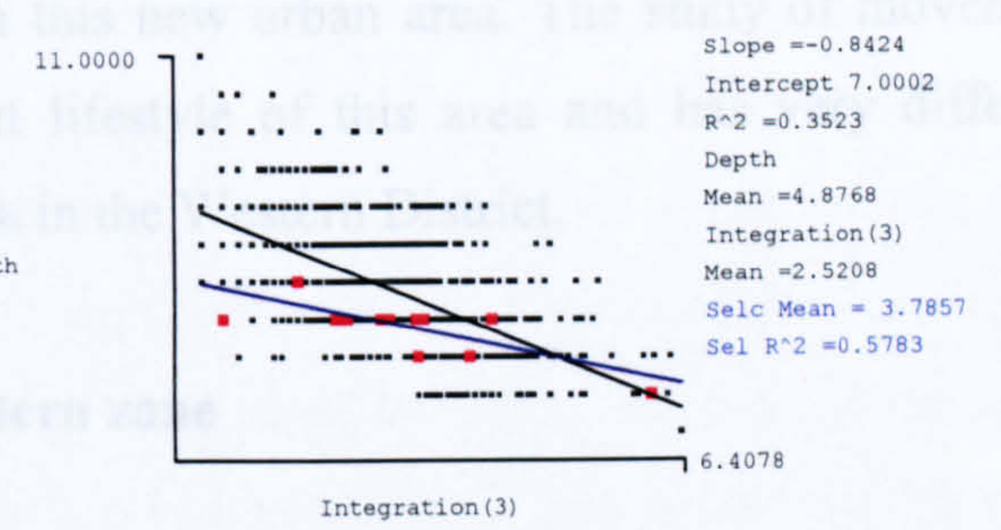


Fig.6.19d: Correlation between depth and integration (radius-3) of Chunghsiao shopping street within the context of Dian District.

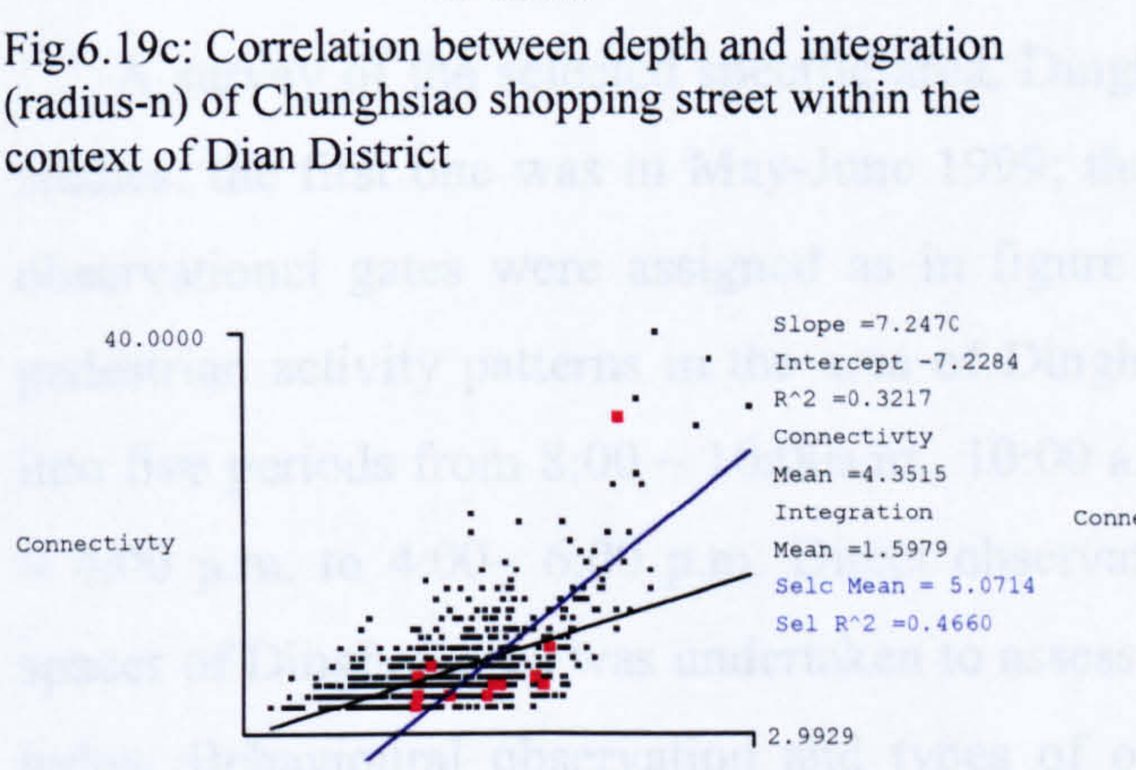


Fig.6.19e: Correlation between connectivity and integration (rad-n) of Chunghsiao East Road Section 4 within the context of Dian district.

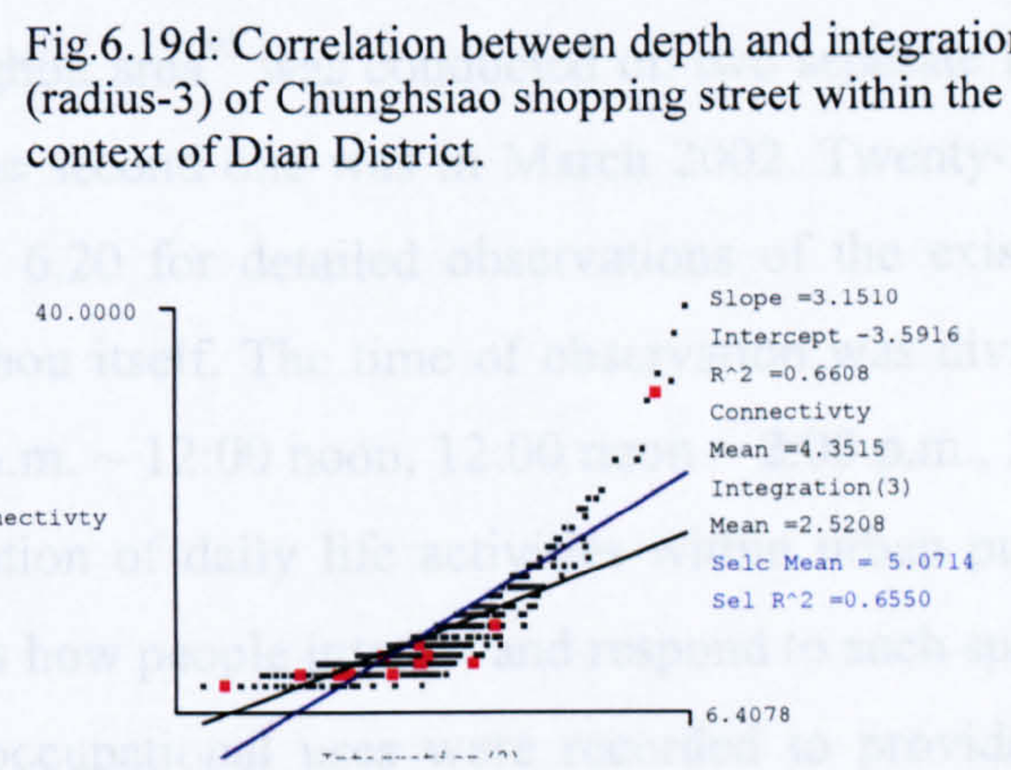


Fig.6.19e: Correlation between connectivity and integration (rad-n) of Chunghsiao East Road Section 4 within the context of Dian district.

6.4 A critical reading of present-state socio-cultural form of space in new Eastern zone

The previous section analyzed the spatial change of new Eastern zone over time and clearly illustrated its representation and syntactic characteristics of morphological pattern in the post-colonial period. But how does this spatial change affect the choice of people over spaces? What is the significance of these patterns for the people nowadays? Together do they reveal and disclose new meanings and any implications in relation to the underlying direction of social change in this new urban centre? These questions need to be answered if we want to understand this phenomenon and to uncover the underlying structure of spatial pattern in the new urban zone, in particular, to distinguish the spatial difference between the colonial grid of the old city centre and the post-colonial grid of the new urban centre that would then enable us to tackle the issues of place-making. To do so, this section examines the relationship between spatial and social patterns, namely, the current interactions between people's daily life activities and spatial configuration of a selected study area for micro-study. The case study of Dinghou area thus aims to see how the transformation of urban space form and the 'local area effect' have affected the daily life of people. What are the changes in interaction and associated meanings over time that would lead to different spatial manifestations in this new urban area. The study of movement pattern in this new district has shown different lifestyle of this area and has very different impacts on the city, as compared with the old area in the Western District.

6.4.1 A micro-study of specific area in the Eastern zone

A survey of the selected specific area, Dinghou area[95] was conducted on two separate field studies: the first one was in May-June 1999; the second one was in March 2002. Twenty-four observational gates were assigned as in figure 6.20 for detailed observations of the existing pedestrian activity patterns in the area of Dinghou itself. The time of observation was divided into five periods from 8:00 ~ 10:00a.m., 10:00 a.m. ~ 12:00 noon, 12:00 noon ~ 2:00 p.m., 2:00 ~ 4:00 p.m. to 4:00~ 6:00 p.m. Direct observation of daily life activities within urban public spaces of Dinghou area was undertaken to assess how people interact and respond to such spaces today. Behavioural observation and types of occupational uses were recorded to provide an

[95] Dinghao Commercial District, centred on the Sogo Department Store, is a hub for the materialistic over twenty-five population segments. All the surrounding area is distinctive by its up-scale shopping, dining, and night time entertainment establishments.

account of the movement patterns of different groups of people in relation to occupational uses. In this micro-study, the graph-theoretic technique based on Space Syntax theory shows the result of the pedestrian movement pattern within the highly connected orthogonal grid layout, and analyses which routes are more accessible than others. The colours show the most accessible routes from red, then orange, yellow, green, through to blue and dark blue for the least accessible routes as reflected from both the globally and locally integrated maps (Fig.6.14a). The local/global scattergram shown in Figure 6.15b indicates a very high correlation of integration (0.8487) for Dinghou area (i.e. Sogo quarter) within the context of the whole district that means there is a high degree of accessibility, which is a measure of interaction between moving people and the functions supported in specific spaces. However, the result is not just about accessibility; it also shows a pattern of activities which are formed in favour of certain uses or so-called 'attractors' in relation to their depth properties. Hillier argues that attractor is regarded as the secondary cause of movement, said to be less important than the primary effect of configuration (Hillier, et al., 1993: 30-31).

The evidence on the ground is clear, as the study of different groups of moving people at all observational gates shows that there is a high correlation between the occupational uses and movement patterns in relation to the depth structure of specific urban public spaces. The result of analysis, as shown in Figure 6.24, indicates that there is a clear hierarchy of intensities of spatial activities in the area in relation to the layers of depth structure. It illustrates that movement pattern within the area implies the choice criteria, cognition and knowledge of urban space regarding the choice of shortest path between certain places and built forms that is related not only to the configurational properties of urban space, but also to the types of use in different spaces and to different genders and age groups of users. The analysis makes it clear that people tend to move from deeper to shallower spaces locally in the whole configuration, as evidence from the study of Dinghou area shows that the cores of attractions are located at the shallowest cells of the structure in the whole area. (See Fig.6.27.) And the results of observations in Dinghou area have confirmed high intensity of activities within its urban public spaces (cores of attractions), which is also supported from the result of a high mean value of local radius-3 integration factor (2.5208), as presented in the scattergram (Fig.6.14c) and the area integration map earlier (Fig.6.14a).

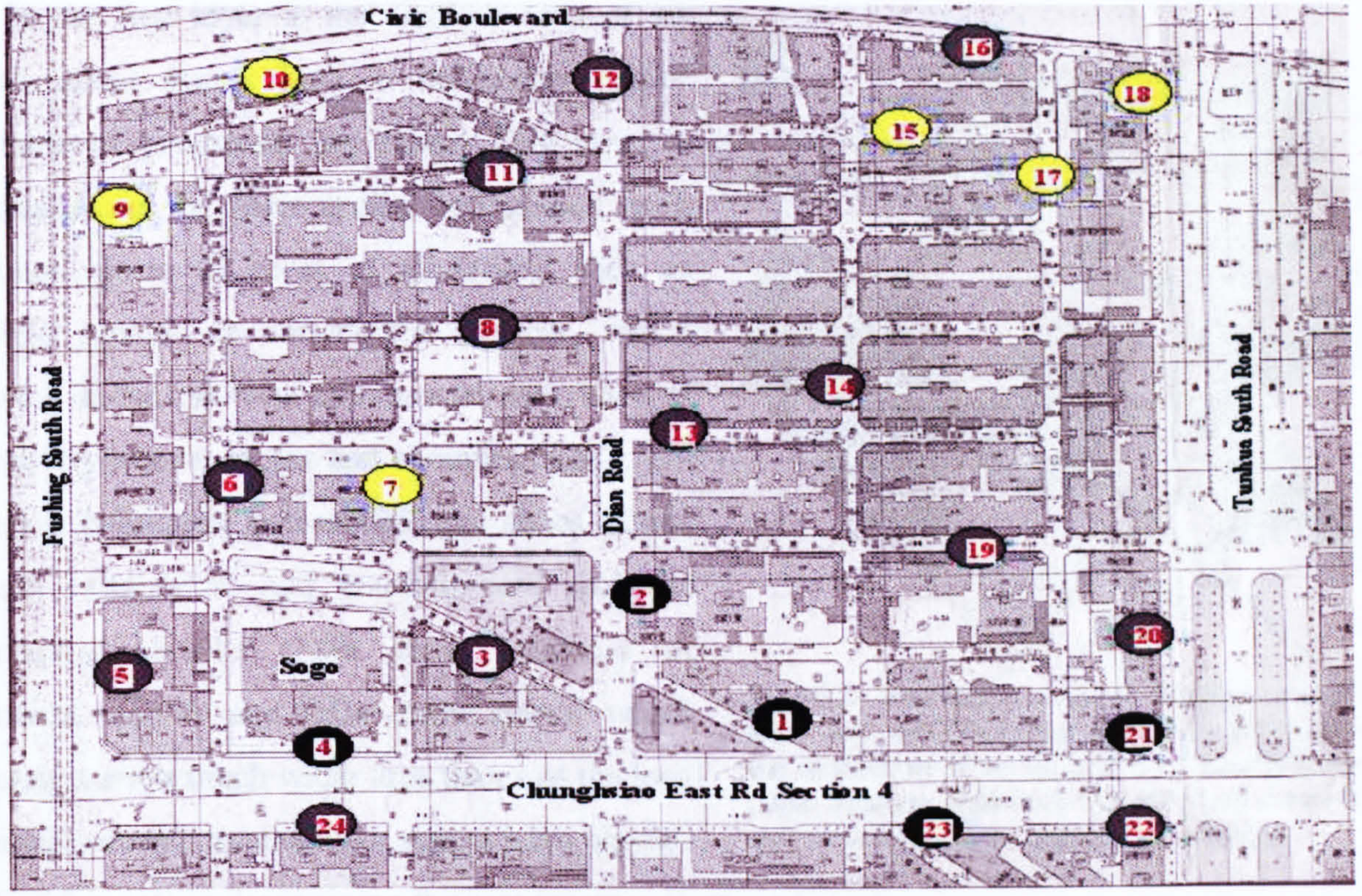


Fig. 6.20: The 24 gate numbers of observation in *Dinghou* area.
(Source: Base map from Urban Planning Department, Taipei City Government, S: 1/1000)

6.4.2 Pattern of Interaction in the new centre

The syntactic study has shown that the movement pattern in the study area has a significant difference from the old city centre. Evidence from the micro-study indicates that four layers of pattern are clearly identified with respect to the types of function and the depth structure, which formulate the rules for organizing the spatial structure of this new urban district itself (See Fig. 6.28 and Fig.6.29). The rules might relate to the cause, such as the length and width of street space, the dimension of urban block—the effect of larger and smaller blocks on integration pattern, the spatial structure and the spatio-functional nature that can be explained from the point depth map (Fig.6.21). The measure of depth of property from the most locally integrated street (Dian Road) in Dinghou indicates a pattern of interaction generated from this locally central axis, in which hierarchies of routes appear in relation to the depth of occupational spaces from the entries spaces (carriers). The relationships of their interaction can be explained as follows:

In the first layer is the shallow cells of all main street spaces have a noticeably higher volume of pedestrian movement This layer is characterized by their spatial articulation with anchor spaces or cores of attractions such as public squares or commercial squares, which have a direct link with commercial uses, such as large department stores and shopping malls, up-market boutiques, accessories, and shoes stores, chain restaurants, and entertainment facilities including karaoke chain shops, cinemas or musical records and CDs chain stores, which clearly serve a much wider area than just the local neighbourhood. Such anchor spaces have played a decisive role in determining the movement patterns in the area.

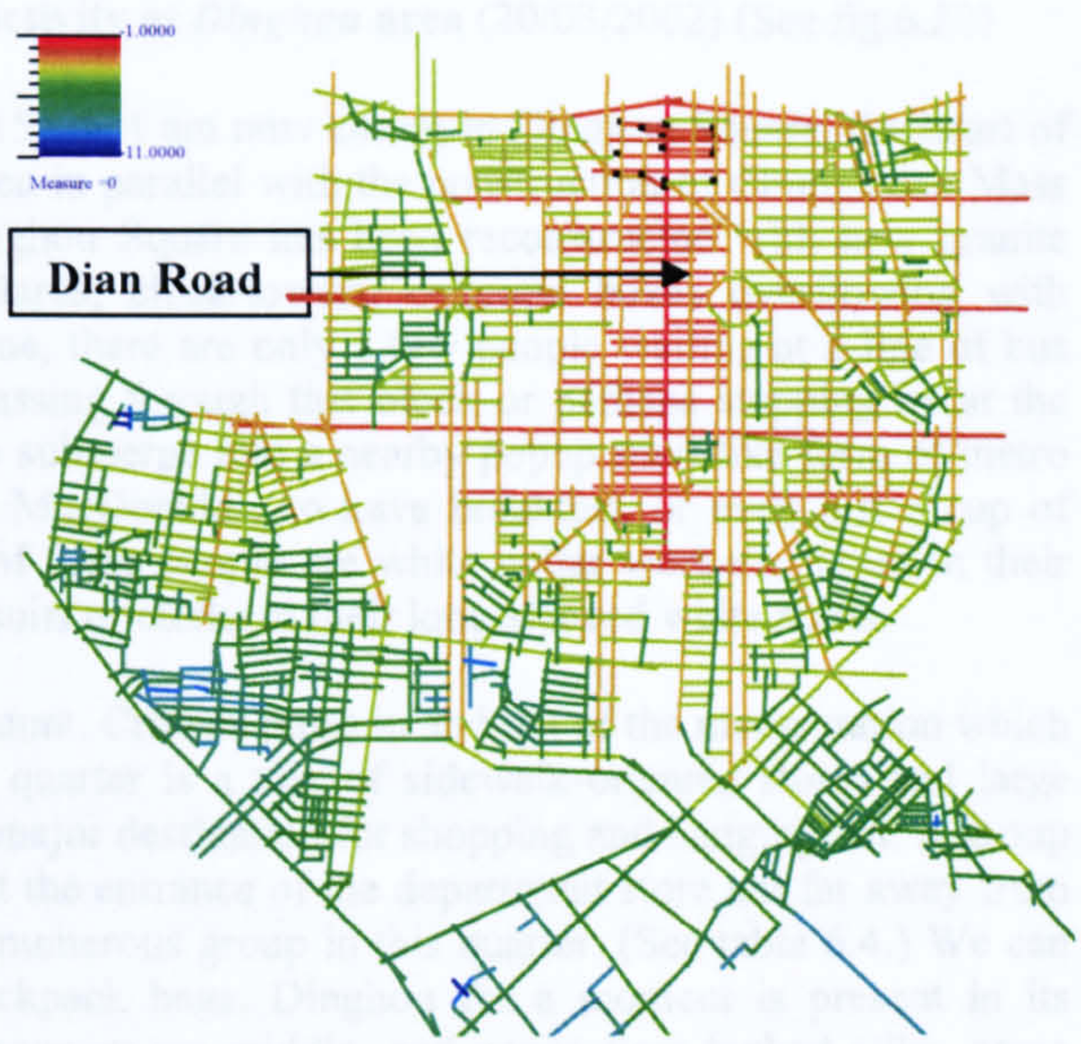


Fig.6.21: Point-depth map of Dinghou area (the black dots area) from supergrid accessibility axes: the connection of the most locally integrated street (Dian Road) to adjacent horizontal main streets (the red lines) within the context of Dian district.

For example, the relative position and permeability of Dinghou Square (gate number 1) in relation to its surrounding occupational uses reflects its significant local position relative to the spatial structure of the whole complex. This claim is based on the permeability graph from this anchor space and counting the distances from this space to all other spaces. Because of its spatial properties, Dinghou Square has the highest volume of pedestrian activities when compared with spaces at all the other observational gates. Its spatial interaction is clearly characterized by the vibrant activities of people's involvement with the square. If we further examine gate number 4 (Sogo Square) and gate number 23 (Lungmun Square), which belong to the second layer, as shown in Figure 6.29, both of them indicate that they are also the spaces of attraction which have a high degree of pedestrian activity (Figure 6.24). These phenomena suggest that urban public space is the centre of urban life and is a key element for the constitution of continuous open space system which increases the inter-accessibility of supergrid to all others within the spatial configuration as a whole. (See Box 6.1.)

Box 6.1 -- A note on a field observation of daily routine activity at *Dinghou* area (20/03/2002) (See fig.6.22)

8:00-10.00a.m.: It is a sunny day with a slight breeze at 8:15a.m. I am now sitting in Dinghou Square, the heart of the Eastern district. The city has invested heavily in this area in parallel with the construction of Chunghsiao Mass Transit Rail system (Blue line). The triangular shape Dinghou Square has been reconstructed with new granite paving, fountains with cascades, young street trees, bollards, clock-towers, concrete boxes overflowing with flowers, concrete benches, and large TV screen. At this time, there are only a few people waiting at a line of bus stops in front of this square, while most people are just passing through this block or perhaps stopping by at the bakery to get bread. Then they are hurrying on their way to submerge into a nearby popup snail-like form of metro entrance. Some people pop into the nearby IS Coffee or MacDonald's to have breakfast, or even just a cup of coffee. From their dress it is easy to recognize that most of these people are white collar workers: ladies in their fashionably long dresses, and businessmen in their tailored suits or clerks in their long-sleeved white shirts.

10:00 a.m.-12 noon: By now there are too many people to count. Crowds pulse in and out of the metro station which gives it access to more people from a wider radius. This quarter is a mix of sidewalk-oriented stores and large department stores. Sogo (Department Store) behind me is a major destination for shopping and hanging out. A group of look-like 40-something housewives have just appeared at the entrance of the department store not far away from me. It is easily to see that female pedestrians are the most numerous group in this quarter. (See table 6.4.) We can also see travellers and tourists like me in jeans with backpack bags. Dinghou for a moment is present in its bewildering diversity of ages and sexes, though most of shoppers are middle- and upper-class looked alike, come together for a moment to window shop, to eat and be in the sun and the presence of each other. Right at the corner of the block, the barbecue sausage stand – long opposed by local merchants – is doing business and the vendor just ringing his bell loudly to attract customers.

12noon-2:00p.m.: By this time, the number of pedestrians is large. Pedestrians are crowding on the sidewalks and the arcade of Dinghou Building. A young female street-artist who appears everyday at a corner of the arcade is preparing her drawing stuff and waiting for her customers. Next to her is an early twenty-something girl selling her handmade jewellery and accessory on an easy-carry movable stand. There are perhaps more than fifty people in this block now. At about 1:30p.m., the construction workers are back at work, so are the secretaries and clerks after lunch. Mainly here now are females in cosy dress. There are more people sitting on benches beneath the metro entrances, either to rest or to admire the view or the passing scene. Down at the corner a woman selling roast corn on the cob is doing a brisk business. The dried-squid vendor pushes his cart along. The sausage vendor wanders along, bearing a whole brazier full of hot charcoal on one side, and chili and barbecue sauces on the other. The smell of barbecue is never far away.

2:00-4:00p.m.: People crowd in the new design square and realize that there is very little public seating for them. Young street trees also provide little shade for them to avoid the implacable sun. Some clever people stand under the arcade either to wait for their friends or to take a rest. A number of teenagers have just walked out of Tower Record and into the next-door MacDonald's. At next two doors, two 30-something women in embroidered dresses stand in front of a fashion boutique and are attracted to the window display. The sidewalks of vendors take over the edges of the streets. While many people come here to shop and bargain with the vendors, others come to enjoy the bustling atmosphere. Further out along the residential streets, vendors push their carts and call out their vendors. The atmosphere here is dictated by consumer's culture but with local custom.

4:00~6:00p.m.: Now the square is filled with hordes of people. We can see that parents walk hand in hand with their kids after school; a housewife with her Philippine maid appear at the entrance of nearby Wellcome supermarket and they seem to be satisfied their purchase with a number of bags in their hands; office ladies and clerks also join the crowd. Some of pedestrians are waiting for the buses at the sidewalk but those not in a rush seem to have enjoyed their window shopping and meeting their friends here.

Fig.6.22: A view of Dinghou Square and Sogo square at different time: 8:00a.m.-10:00a.m. – the scenes at the far and middle left; 12:00 noon - 2:00p.m. – the scene in the middle right; 2:00 p.m. -4:00p.m.– the scene at the far right.

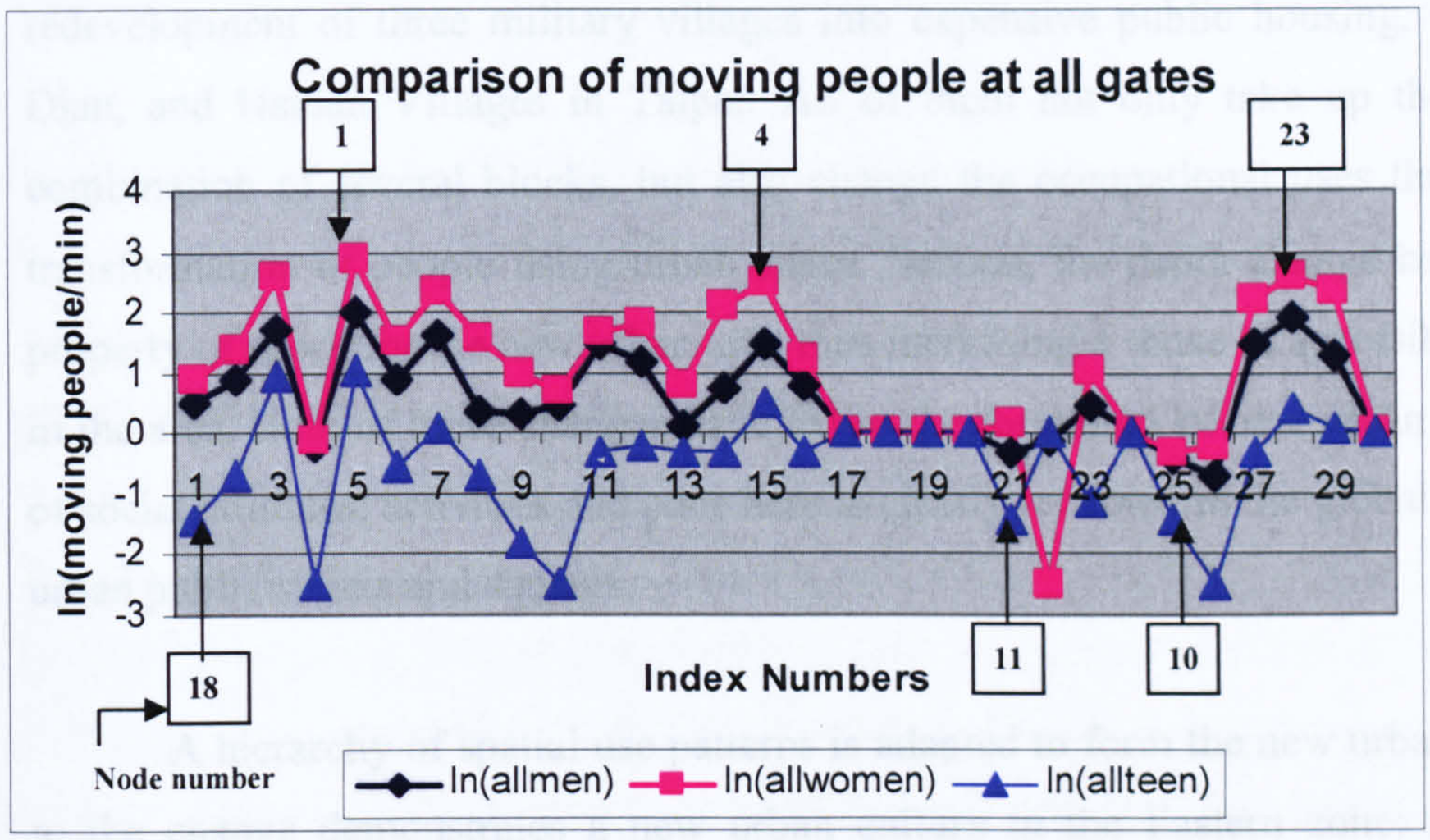
The third layer is the less shallow cell of cross-areas adjacent to the first layer of supergrid structure as shown in the orange and yellow grid area of the depth map where shopping penetrates the interior of the area. The area is a transitional between the supergrids and the innermost area. The smaller groceries, bakers, 7-11 convenient stores, repair shops, small restaurants and cafeteria, and jewellery stores etc. are the types of function that reflect a much closer link with the immediate neighbourhood. For locals it is a convenient local inner area of shopping facilities.

The fourth layer is the deepest cell of inner-blocks at the fringe area at where residential is the major function. This phenomenon coincides with the result of London case described by Hillier (1993, 1996 and 1998). He finds that residential area, as the less-integrated and non-attraction area, always appears as the deepest layer within the whole spatial structure of the city and is regarded as 'disurban place' (ibid., 1996:178). In this case, inner-blocks are also penetrated with a variety of functional combinations, such as public housing, schools, military base and urban local parks, which create the local area effect characterizing those larger blocks with specific configurations of connections, permeability and resistance. Thus, this layer exerts a much weaker attraction to encourage the taking of cross-area short-cuts than the highly intelligible and dominant supergrid spaces mentioned before. Obviously, the inner-blocks have exposed a different picture of social contact and interaction and is used predominantly by a single group, for example the residents of up-market residential area like Belgravia area in London, which is clearly socially different from other neighbourhood (Fig.6.23). As a result, the area encounters a lower intensity of movement flows and activity patterns because of the low opportunity for contact and exchange in this area.

Fig.6.23: The up-market residential area dominates the inner-blocks of new urban Eastern zone.

The spatial analysis has shown that the constitution of public space in this area is embedded with hierarchical difference; as you can see such difference permits some to exercise power over others. This power establishes a hierarchy of values that shapes the pattern of interaction in those spaces and dictates the activities performed in them and the economy of

the new urban area. Boundaries between groups and activities are clearly demarcated according to the actors on the usage preference of functional space, as reflected from the formation of different layers of patterns. In this sense, it would be easy to imagine why the weak relationship between human institution and urban space develops if there is lack of proper thinking by the people who live in the area. A change of spatial pattern and social norm in this area has created its own public identity, but on the contrary, it also has led to reluctance to accept old values and norms in this global influenced area.



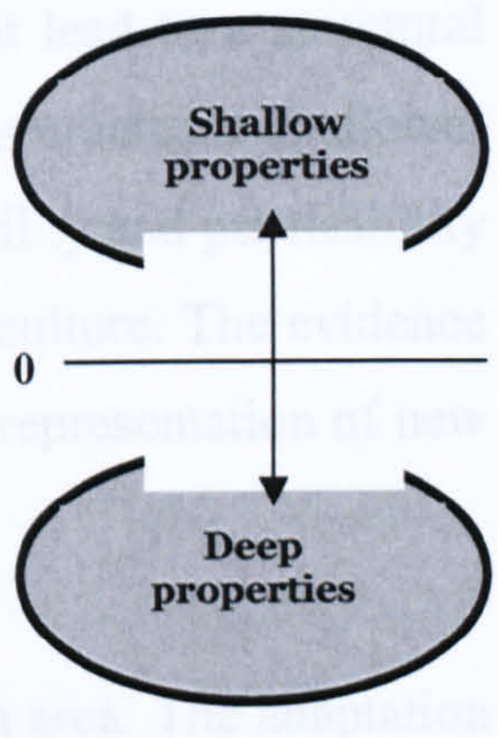


Fig.6.24 Comparison of moving people at all observational gates

6.4.3 Spatial change and adaptability: the formation of new urban culture

Fig.6.25: New spatial image of new urban area

A new image of urban public space is created for the new Eastern zone. It is distinguishable not only by what we see in the change in its hardware, such as the construction of wider pedestrian pavement planted with greenery to protect it from the carriageways, the installation of new design street furniture such as benches, concrete boxes with flowers, lampposts etc., or with free access arrangements for the disabled at all street corners (Fig.6.25), but we also notice that the new urban spatial layout and the uses have led to social or cultural change taking place in this new urban area. Indeed, the latter change creates a dramatic impact on the spatial structure and the interaction between people and urban

space that drives the formation of a new urban culture, which is adapted to the new global environment and is different from the old city centre. To be precise, there are two fundamental changes related to this formation which are reflected from the spatial analysis of the new urban zone. First, the change to larger block development in articulation with supergrid street pattern incubates the change of functional use in urban space in terms of scale and spatial activity. Grand scale developments become the dominant features in the new area. To name a few, the transformation of Hey-sung soft-drink factory site into a large shopping mall, i.e. Breeze Centre; or Sungshan Tobacco Factory into the largest mall in Taiwan: Core Pacific City Mall; or the redevelopment of three military villages into expensive public housing, namely Cheng Kung, Dian, and Hsinan Villages in Taipei. All of them not only take up the entire block or the combination of several blocks, but also change the occupational uses that lead to a structural transformation of people using urban space. Second, the depth change has created a shallower property of space for the new urban area thus increasing a sense of accessibility and permeability in the area. Both of these changes have led to the formation of new urban culture. The evidence of social attitudes, activities and pace here is clearly reflected in the global representation of new urban public streets and squares.

A hierarchy of spatial use patterns is adapted to form the new urban area. The adaptation to the change demonstrates a new urban culture in the Eastern zone: a mixture of modern, functional segregation and global representation, which is a product generated from shallow-type spatial configuration. New spatial meaning is evolved from this new urban culture. No doubt the meanings behind these patterns and forms are actually extensions of marketing value and power representation in the global culture of late capitalism. As evident from the axial analysis, urban activities attached to the supergrid of major arteries and boulevards become the integrated core of the new urban area. Street space here falls into the category of a commercial commodity traded in the global economy but loses much of its local culture. For example, Chunghsiao East Road Section 4 and Tunhua South Road, are both the representation of global spatial commodities in terms of their up-market commercial activities and market values. Urban activities concentrated along such linear urban space become a dominant with a sense of grand scale, straight, easy accessible and commercially oriented in the new urban area. Such spatial form is a globalizing entity of new urban culture which has distanced itself from historical connection and local experience but is rooted in the hub of foreign imagery. It changes the

Fig.6.26: Plaza is improperly sized with poor relationship to the adjacent built form and cut off from the pedestrian activities

Fig.6.27: An inactive plaza next to Taipei City Council is unfavourable for public use

spatial environment and the patterns of uses in the city. Although this kind of grand linear spatial form also appeared in the early history of Chinese cities, for example the grand Qianmen Street with its connection to Beijing Forbidden City, nevertheless its formation was based on a different ideology and power to organize the setting and spatial uses. It was primarily formed by direct linking to the central axis of supreme space of the whole complex which is the deepest space in the whole spatial organization. A deep and perpendicular orientation of inter-relationship between this spatial form and occupational uses are clear a reflection of culture response and a manifestation of imperial power. The modern grand linear spatial form is adapted to form a new urban culture in relation to its shallow depth. Depth structure changes the degree of accessibility and has brought new meaning to new urban form in relation to its uses dictated by the ideology of today's global value and commercial culture. In other words, today a successful urban space is primarily valued by the number of people who see it and are able to get to it, and is determined by the market value as well.

New spatial form is adapted to favour the formation of new urban culture but it is a kind of skin-deep culture dependent on 'commercial value'. It is only for a privileged group. For example, large shopping malls, leisure centres, and expensive shops seem more and more to be fencing people off, even sometimes requiring permission and appropriate dress code for entry. It seems that nowadays ordinary people are often patronized by corporate power and are free access to urban public spaces. Besides, many of the new plazas/squares, such as commercial plazas at Far Eastern Plaza or at Elites Book Store (Fig.6.26) or public square next to Taipei City Council (Fig.6.27), have proved to be improperly sized or enclosed by exclusive uses in favour

of a single group. Or some public squares are cut off from the street activities, or people do not quite know how to use them. In this sense, new urban culture seems to end up with functional segregation and global representation. This part of the city represents commercially-oriented urban space with sameness, repetition, and a fundamental lack of self-conscious design.

6.5 Spatial Revelation of Contemporary Eastern Zone of Taipei City

The spatial analysis has indicated that the relationship between social and spatial patterns in this new development area is different from the old district of the city. The new centre, which is developed in a strongly geometric and highly controlled manner, arises as a result of global economic functionality and the shift in the representation of power over the restructuring of spatial hierarchy of the city. The old areas at the west of the city seem marginalized; their lack of connection to the 'mainstream' economic and social life of the city around them has led to the decline of the area in recent years. In the development of the east sector, which has evolved as the new centre of the city, differences can be perceived, not only in its sense of grandiosity, but also in differences housing style, of sub-culture, of street pattern, of public spaces from the old district at the west. It seems that all the changes reflect the constitutive relationship between historical and cultural values and economic activity.

These differences are clearly shown in the interaction between people and urban space that lead to difference in the pattern of local and global character in the new urban area. The justified graphs, as explained in the ensuing section, have revealed not only the underlying structure of spatial pattern, which gives character and identity to the place and explains the reasoning of functional performance from spatial form and pattern, but also have revealed the transformation rules behind the spatial changes to this new urban area, as these rules generate the pattern of form and the pattern of space.

6.5.1 Underlying Structure and Significance of Spatial Patterns

The spatial analysis of Dinghou, as a typical representation of the whole spatial pattern of new Eastern zone, gives a generic view of the constitution of its spatial structure and pattern. A spatial genotype is revealed from the analysis of overlapping syntactic layers: spatial

configuration, movement pattern, and spatial occupational uses. The result has proved that there is a strong correlation among spatial configuration, movement pattern and occupational uses and their inter-relationships are arranged in a hierarchical depth structure drawn from the carrier space in relation to the whole spatial structure, as shown in the justified accessibility network of spatial depth structure. It indicates the mean depth of each urban space that helps to demystify the underlying structure and significance of spatial patterns (Fig.6.28).

The justified accessibility network in Fig.6.28 (refer to Appendix 2, Table6A-3) is purely drawn from the most integrated core space (the carrier space at gate no. 8) of integration axial map that has generated four levels of depth structure in relation to all spaces. The result shows that residential use occupying the depth at level 2 and level 3 represents the shallower cell of the whole complex. Anchor space such as public open space or commercial square is classified as the deeper space relative to others in the whole network. The result seems to contradict the assertion made by Hillier in his numerous case studies (1993, 1996 and 1998) that residential is the deepest cell of the spatial configuration as a whole. However, if we take the local effect of the rate of movement pattern into account, the network in Fig.6.29 (refer to Appendix 2, Table 6A-4) shows a different picture with an inverted structure which is likely to fit the argument. It accounts for the connectivity relationships between nodes and the structural hierarchy of these spaces that is drawn from the highest number of pedestrian movements at gate number 1 (carrier space at Dinghou Square). It turns out that residential use locates as the deeper space in the network.

On the contrary, anchor space appears as the shallower space in relation to the carrier space which in this case is in a direct link with main street space. Both network diagrams give a clear holistic account of spatial configuration in relation to depth structure and the occupational use of each urban space before and after the consideration of the rate of movement patterns respectively. There is a common phenomenon that mixed use spaces such as retail shops and restaurants appear as a transitional spatial pattern to link between the shallowest public space (anchor space) and the deepest private space (residential space) in the justified network. However, it is particularly interesting to see their difference in terms of the order of each urban space and the rule for the arrangement of this spatial pattern as a whole affected by local effect. From the view of this comparison study, we could draw the following observations:

1) Connectivity relationships between spatial nodes of the whole spatial network are likely to alter when the order of each spatial node is changed. In this sense, the overall depth of a system may be dramatically altered by simple local changes. For example, the value of mean depth in Fig.6.29 is shallower than the whole spatial network in Fig.6.28. (3.1034 against 3.5333 respectively, see scattergrams in Fig.6A.6 and Fig.6A.1)

2) The whole is seen differently when considered from each of its spatial units. This is why spaces with different structural properties are likely to be used for different purposes, as reflected in the justified spatial network.

3) They are only understood when the whole configuration is analyzed from the point of view of each of its component units, i.e., by justifying the permeability graph from each space and counting the distances from each space to all spaces, but the meaning of the configuration also needs to be backed up with the local cultural context. In this case, the observation of local movement pattern and occupational uses has given a vivid picture of why public open space is justified as the anchor space in the whole spatial network.

The significance behind the pattern reflected from the syntax measures indicates the underlying structure of the spatial configuration and the relationship of non-syntactic parameters to the underlying structures of the spatial configuration. The spatial pattern reflects the differentiation between the core and fringe spaces, but the plaza/public square acts as a network linkage to articulate the flow of movement in the area. It shows that the levels of accessibility and permeability of Eastern District is directly related to the development of supergrid pattern or so-called 'post-colonial grid'. Such configuration favours the concentration of large upmarket department stores and designer shops along the shallow space and reflects that the system of commercial market values plays as a major power to determine a shift of spatial centrality from the old centre in the west. The depth of space shows users' preferences and life style that reflect their values on the choice of spaces. Such a phenomenon clearly shows why new urban area is a paradise for middle- and upper-classes. The standard of such development is high and the idea seems to be carefully thought through, but the area is a bit bloodless and rigid.

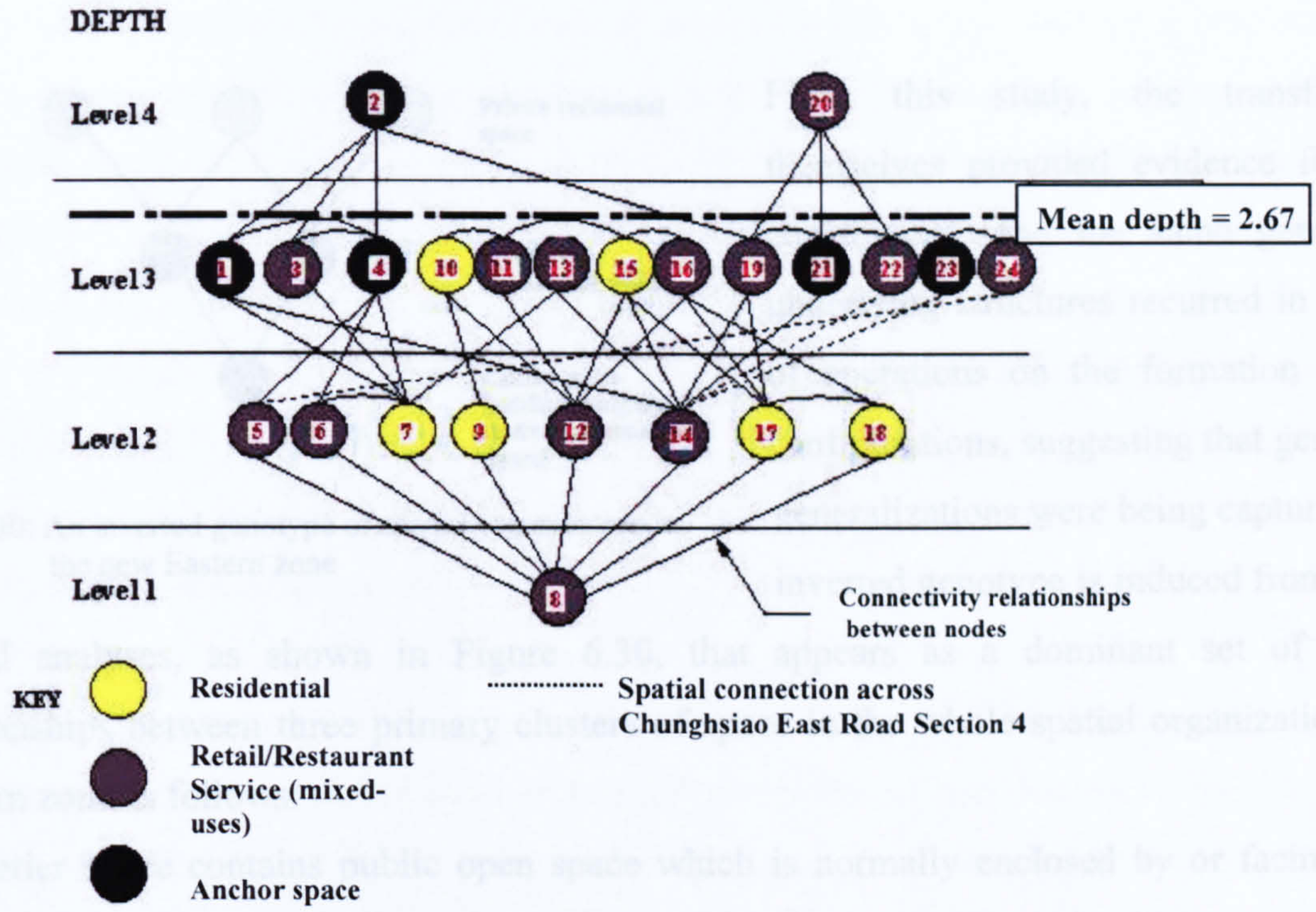


Fig.6.28: Justified accessibility network drawn from the most locally integrated core space (gate no.8) indicates a hierarchical depth structure in relation to the whole spatial configuration.

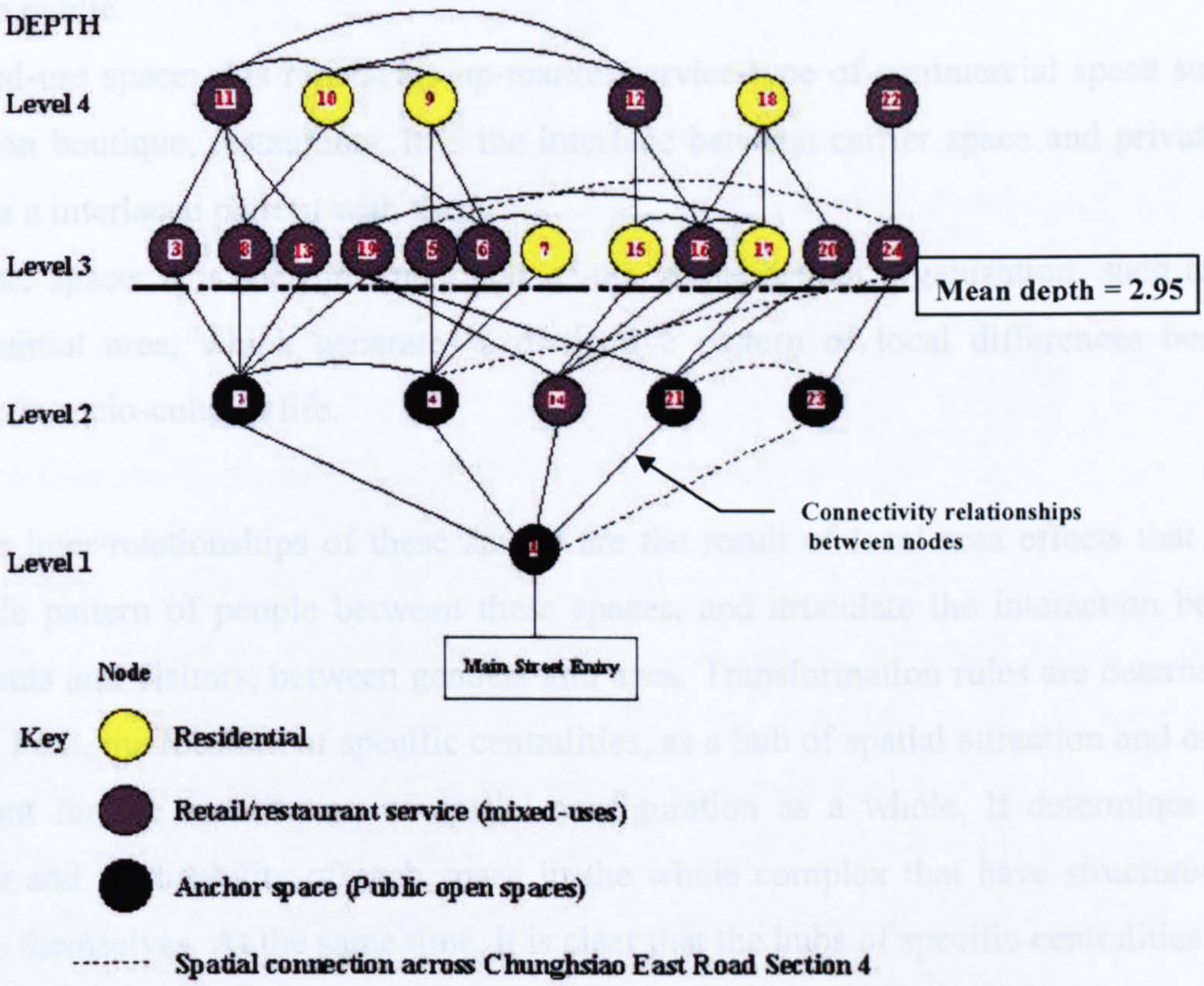


Fig.6.29: Justified accessibility network of spatial steps drawn from the carrier of Dinghou Plaza in relation to the whole structure of the district.

6.5.2 Transformation Rules of Urban Space in the New Eastern Zone

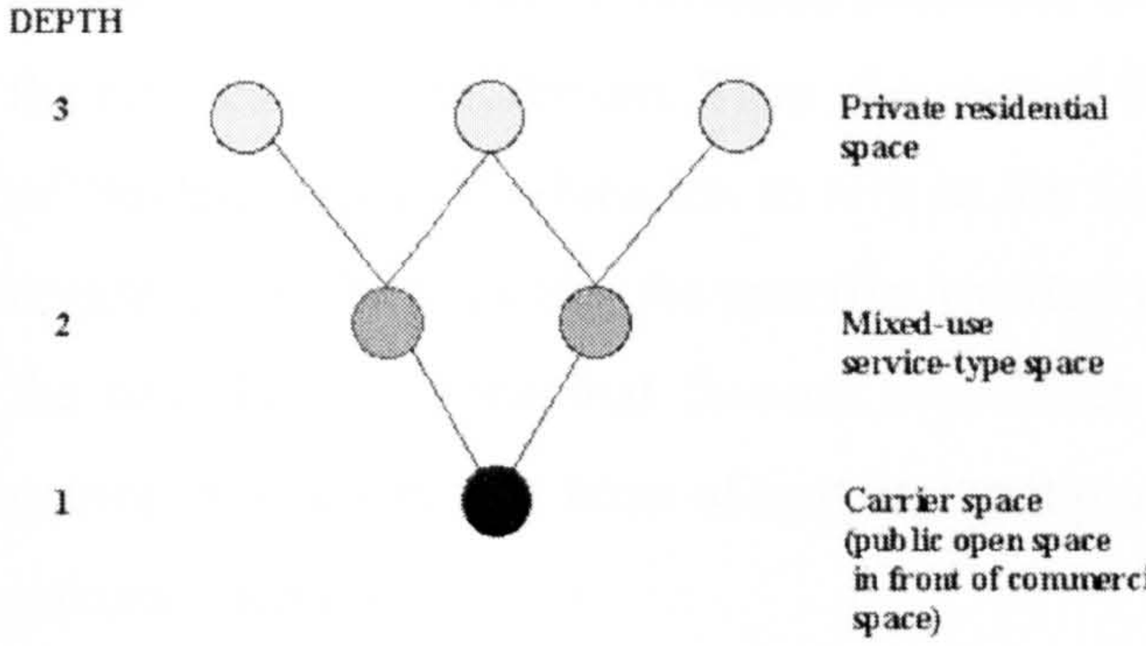


Fig.6.30: An inverted genotype of spatial organization in the new Eastern zone

From this study, the transformations themselves provided evidence for certain constituents, and the same genotypes or underlying structures recurred in a number of operations on the formation of spatial configurations, suggesting that genuine generalizations were being captured. An inverted genotype is induced from previous spatial analyses, as shown in Figure 6.30, that appears as a dominant set of structural relationships between three primary clusters of space in the whole spatial organization of new Eastern zone as follows:

1. Carrier space contains public open space which is normally enclosed by or facing towards commercial space such as grand shopping mall or department store. It acts as an anchor space of attraction. It is the shallowest cell of the spatial organization and the most accessible space to the public.
2. Mixed-use space: this represents up-market service-type of commercial space such as hotel, fashion boutique, restaurants. It is the interface between carrier space and private space and forms a interlaced pattern with them.
3. Private space: it is the innermost cell of the whole spatial organization, such as up-market residential area, which generates a distinctive pattern of local differences because of its specific socio-cultural life.

The inter-relationships of these spaces are the result of local area effects that mediate the daily life pattern of people between these spaces, and articulate the interaction between local inhabitants and visitors, between genders and ages. Transformation rules are determined by two factors. First, the location of specific centralities, as a hub of spatial attraction and orientation, is important for the constitution of spatial configuration as a whole. It determines the relative position and permeability of each space in the whole complex that have structured the spatial patterns themselves. At the same time, it is clear that the hubs of specific centralities tend to shift their positions and constituents over time according to the spatial analyses of Taipei city from the

early Ch'ing Dynasty to the present time. The transformation process will be kept continuous if an uneven distribution of localized resources across the city is maintained; it will cease only if the city reaches equilibrium. Thus, the second factor for transformation has to depend on a state of "spatial stability", which has to rely on the final form of genotype embedded within the spatial organization. In this case, the specific inverted genotype illustrates the way of transformation in the new Eastern zone that favours superblock patterns instead of small deformed grids, and comes to a concluding term of new occupational uses in the new area that creates a new socio-cultural identity.

6.6 Conclusion and Discussion

In this chapter, the study of Eastern zone has shown that from the seventies the formation of the new urban cityscape reflects and represents the process of transformation from top to down. The pace is extreme that at any point of time a snapshot of the city shows spaces and places under a radical form of 'creative destruction' on a huge scale. The process of spatial expansion across the Keelung Road into the 'new centre' of the city is the most experiential instance of this reconfiguration. However, the new area is also realized in the penchant for massiveness, uniformity of function and urban development in which the human factor is missing, and second-rate architecture continues to make its mark in this new zone. Though the genotypes of spatial organization in the Eastern areas have determined the spatial character and identity of contemporary socio-cultural form of space, there are several questions which need to be debated and carefully thought through as follows.

6.6.1: Spatial character and identity: mimic or genuine?

In general, the 'new' city is capable of supporting a 'new' modern lifestyle with the formation of new urban forms, which are commonly argued as being capable of facilitating an efficient and technologically enabled society. However, nowadays people lack the experience of the intimate, small traditional settlements with narrow streets, filled with people and dotted with temple's market squares and streets. It was this that provided a sense of smallness and intimacy, which contributed to the sense of community. In the new Eastern zone, the identity of place still struggles to find a position for itself although the spatial characteristics of the new Eastern zone can be summed up as follows:

1. It produces a new kind of urban space occupancy not available in the old districts of the city.
2. It is radically different in scale and mass.
3. It differentiates a specific and narrow definition of urban life and culture, which is basically adapted from American culture.
4. It carries out a global image which has a high resemblance to other global cities in the world.

But are these spatial characteristics enough to claim a genuine identity for the city of Taipei? The study of spatial transformation over time reveals that the crisis in spatial identity always arises from the elimination or dilution of the features of specificity and the indifference of spatial configuration with regard to the cultural structure. Self-realization and identity formation often takes place within a material as well as ideological context. It is realized that the importance of self-identities should be rooted in more symbolic and spiritual dimensions. In so doing, these self-identities need to acquire certain urban forms in order to manifest their distinctive existence and image.

In the old areas, there are many existing historical religious buildings or spatial patterns which obviously help the self-identities of the areas. However, the spatial environment of Eastern zone is beyond our capacity to organize our experience of local culture in a coherent and meaningful manner. As we can see new heterogeneous and fragmentary urban forms of spaces, such as super shopping malls, grand hotels, skyscraper offices, or grand street spaces and public parks are randomly scattered in these places. In particular there is a lack of urban forms with symbolic and spiritual dimensions. One may argue that these new forms of urban spaces encourage a particular type of new urban culture. But if this new urban culture is built only on the consideration of market value or relies on any single urban paradigm or ideology, which may favour a particular group of people, it does not help to refine the identity of place as spatial reality. If the place has not taken account of its cultural ground and of all people as a whole, it is devoid of the kind of nuance and complexity. As a result, we may find ourselves literally 'lost in space'.

6.6.2 What value: post-colonial globalization/internationalization or locality?

The spatial transformation of the city in the last decade has re-inscribed old and new functional boundaries, constructed new 'local' places and spatial identities, restructured local practices, and created new social relations of power. The city seems to fall into line with the local-global conflicts of postmodernity. The case of new Eastern Zone illustrates the production of new 'locals' within a globalizing environmental discourse. It is clear from the reflection of spatial organization in the inverted genotype that the new area is largely influenced by the global capitalist market, which is knitted into the fabric of everyday life. The Eastern zone is a representation of minor locality within a dominant global context. That means it is a bounded place with an identity linked to a global discourse of environmental security, but depends on its constructed difference for its essential 'locality'. However the intervention of imperialism and corporate standards create a sense of placelessness for this new urban place. For example, MacDonald's everywhere is one clear evidence of the acceptance of American value, or in general speaking the acceptance of globalization value, to insert into the local context. Planet Hollywood, MacDonald's or the huge Warner Village Cinema Centre have become as real symbolic places for most of younger generations. Besides, the head offices of numerous foreign global banks, like Citibank, Bank of America; or corporate and insurance companies such as IBM, Fubon Insurance; or department stores with foreign labels such as Shinkong Mitsukoshi Department Store, New York New York Department Store, are all located along the streets of this new urban area. All such global corporate agenda are just the reflection of the global power on the production control of urban space. In other words, they are just other forms of spatial colonization as in the past colonial periods.

Though the new Eastern zone is constructed with supergrid pattern favours easy accessibility, it is a place full of privatization of public life and spaces full of shopping malls, corporate plazas, arcades, and many such contrived or themed settings which create an illusion of public space. The area possesses a character of contrived urban spaces and high costs that discourage the poor and undesirable. In this sense, it is more or less a reflection of the decline of the public realm. Such environment encourages a form of parochialism. It implies a hierarchy of power by which urban space in this new area is negatively constructed to exclude specific groups of people and marginalize the old area of the city.

The exclusivity of consumer activities, which favour middle- and upper-classes of the society, create a distinctive socio-cultural scene different from the old Western area. The area is home to a prized selection of the city's swankiest restaurants and clubs. For example, some eateries reflect the increasingly multi-international cultural flavour: serving American, Indian, French, Italian, Greece, and Mexican fare. American fast food places have also invaded; major chains like McDonald's, Pizza Hut, Starbuck, IS Coffee and Seattle Coffee have each established at least one outlet in this new district. Urban forms in this context are the products of hegemonic intervention by global force, and these spatio-cultural forms are the representation of global value. Perhaps, as Edward Said says (1993, xii), 'cultural forms were immensely important in the formation of imperial attitudes, references, and experiences.' It is another kind of reflection on global expansions of the imperialist venture.

In the post-colonial era, it represents a shift in thinking about style and aesthetics, and it is here that the real significance of post-colonialism lies. It posits some alternative values of a more global kind, and an alternative view of the quality of life. The alleged shift from localization to globalization is particularly relevant to the new Eastern zone as it is the place where the shift from localization to globalization has most clearly occurred. No doubt, the spatial developments of the new urban centre here are surrounded by a particular kind of image, and promote a direct connection to a global market place.

6.6.3 The Representation of Power in the urban space of new Eastern zone: a cultural linkage or disintegration?

The spatial analysis has revealed that the shift of centralities from the old city centre to the new centre at the east has reversed a traditional stable mapping of power relations between 'centre' and 'periphery' of the city. The shift has tremendously transformed the urban landscape of the area in terms of spatial morphology and occupational uses. It conveys a message beyond such transformation that the re-structuration of spatial organization is a representation of power. It seems that this power is embedded with global and market values which make the place to promote itself with new and grand images of spatial developments. Different building types and large urban developments, such as grand shopping malls, international hotels, luxury condominiums and apartment buildings, and super high-rise offices have emerged in the area for over a decade. The organization of such grand but shallow spatial patterns reflects and embodies

the operation of power, its distribution, and its presence. It manifests itself as a real representation of a global city for Taipei, as a result, shaping the possibilities for new social interaction and spatial control of the city. It makes possible a whole different set of meanings and social practices. In turn, these identities transform the very spaces they inhabit, shifting their appearance and atmosphere at different times of the day.

Fig.6.31:The new Taipei 101 Financial Centre is a representation of power dominant over spatial construction
(Source: http://www.tfc101.com.tw/).

The Eastern zone demonstrates its new power and importance; numerous shiny high-rise office buildings and towers are built in the heart of Taipei's new Eastern Business district with the most central, accessible location in transportation networks. Office buildings in high-priced central business districts (CBD) represent the power and prestige of information-work organization. For example, the new Taipei 101 Financial Centre in Hsinyi Special District is the tallest building in the world which is obviously intended to represent a new centre of power and gives a very strong symbolic statement to the new district (Figure 6.31). It represents a new spatial form, as a vertical walled community with security arrangement to regulate entry, embedded with an image of globalisation and economic power. It is marketed to high-income groups instead of serving the whole society. This is the common aspect of the spatial landscape with tall and compact images in this new urban centre, configured by a supergrid spatial pattern with an unbalance skyline. As a result, the larger urban fabric of the Eastern zone raises a question of cultural linkage and spatial integration with the whole city, in contrast to the small grain pattern of the old city centre.

As mentioned in the previous section, the supergrid space is a representation of the post-colonial grid pattern characterized by its mixed intensity areas along the major transport arteries in the new district. However, the post-colonial culture embedded within this new district has raised the issue of authenticity and hybridity in architectural representation. The colonial hegemony has disrupted and transformed the old relationships and has to a large extent changed the spatial configuration of the city as a whole. The sense of delirium experienced in this new

built environment is hard to explain: vast glass spaces mirroring the sky or ornamental spaces lacking the ability to nurture social interaction. It is a place composed of a certain pattern, as in Manhattan, which carries with it the promise of power and wealth as a symbolic image of modernity and globalization. The urban forms in this district reflect and contribute to values and identities which diverge from the values and identities in earlier periods of Taipei's development. Finally, we should ask what remain of 'local Taiwanese culture' in this modernist/ postmodernist pastiche.

CHAPTER SEVEN: PLACE-MAKING AS A CRITICAL PROCESS OF SPATIAL TRANSFORMATION

CONTENTS

Chapter 7: Place-making as a Critical Process of Spatial Transformation

Attain complete emptiness,
Maintain steadfast quietude
All things flourish
But each one returns to its root
This return to its root means tranquillity and stability.

(Lao-tzu, *Tao-te-ching*: Chapter 16)

7.1 Prologue

This chapter will not simply make a comparison of spatial transformation and characteristics between the old centre and the new urban centre of Taipei, but more importantly, it will set out on a journey to reveal the 'two faces of a city' which are critical for learning how to acquire a proper way of place-making for the city in the future. Taking Lao-tzu's philosophy as a reflection, the return to roots is regarded as the paramount act which can make this claim through the reading of everyday life in the urban centre that has been clearly demonstrated in previous chapters. Several questions are followed-up to reveal: first, what lessons can we learn from the study of the old western district and the new eastern zone? Do they coexist in harmony? Second, what are the rules and elements which account for the different systems of transformation in the old settlement area and the new urban area? Might there be some values and ideals which place-making should aspire to, wherever it is practised? Third, what exactly are the numbers (i.e. results of syntactic analyses) we are talking about, in other words, do they have any implications to support the arguments so far? At this point a brief summary of the previous analyses is needed to retrace the steps I have taken – what I set out to do and how I have done it.

In part one, the research project is outlined with the theoretical basis which is the frame of place-making. It argues that place-making needs to be reconstructed through reading beyond spatial transformation of the urban built environment. The problematic of spatial development in Taiwan served as a way to define the theoretical boundaries of the inquiry. It pointed out that the current identity crisis and state of confusion were

commonly embedded within the current spatial milieu. The gobalized condition had afflicted people leading them to believe that they were losing their individual identities and being devoured or subsumed into an unbalanced ambiguity of urban space. It is suggested that spatial change is often a reflection of the clash of two cultures, such as the conflict between old and new, or subordinate and dominant groups. These conflicts have led to urban built forms changing continuously and constantly, thereby creating new meanings and interpretation over time. In order to explore this changing phenomenon and to grasp the underlying structures of spatial patterns in relation to social change, the urban life of people and urban built form can be studied in the context of current urban society.

Based on the tentative theoretical framework, Part Two carried out a case study of spatial transformation in the historical development of Taipei, and investigated the current interactions between people and urban space in the old settlement area in the Western zone and the new urban area in the Eastern zone. The findings showed that the urban development of the city is built on the spatial transformation towards 'centrality', which clearly occurs in the centres of everyday life over time. It is this sense of 'centrality' which determines the configuration of urban space with respect to spatial stability and also signifies a representation of power over space.

To avoid an over-simplified or fragmented perspective, we should recognize that the dialogue between the old and the new centres requires a broad analytical framework in order to understand the process of spatial transformation which is a prerequisite for accomplishing 'place-making' afterwards. Thus, Part Three attempts to investigate different patterns and meanings that would help us to see how they affect people's lives and the identity of place. As the future is always written into the recollected past, this study has allowed us recognize that place-making is not a static form of communal life. Instead it is evolved from different stages of historical transformation with respect to societal modernization, cultural and political representation in the urban centre, which can only be revealed through the epistemology of the shift of spatial paradigms. The study of these paradigm shifts would let us understand that a genuine identity of place is built on a long-term and dynamic growth process. The broader framework would

significantly help re-envision the place-making of Taipei with a proper reconfiguration of open space, built forms, visual corridors, land use, and traffic circulation of the city as a whole. Again, the aim of this part is to discuss how the insights and understandings gained from this study could possibly be utilized in the current situation, but its validity can only be evaluated by some form of concrete practice.

7.2 A shift in spatial paradigm: a past into the future

The case study of Taipei city has significantly indicated that the shifts of spatial paradigms[96] were closely related to the change of different periods, in particular, the shift of the centres of the city in its historical process of development. According to Kuhn (1970), paradigm changes are fundamental shifts in people's view of the world. In analogy, the notion of paradigm shifts may also be applied to fundamental shifts in values and socio-cultural thinking which execute deep influence on the spatial patterns of the city. The spatial pattern of Taipei in the Ch'ing Dynasty was a reflection of a traditional paradigm of early settlement, which was always distinguished by its organic growth pattern with dominant linear spatial form. The linear spatial form such as street space, was normally formed as a hub of settlement that linked surrounding spaces and a magnet to attract all everyday life activities along such space. The practices of everyday life characterised the social and cultural forms. For example, the linear street space enclosed by mixed-use shophouses was a socio-cultural product which illustrated two points. First, it indicated the integration as well as the demarcation of private and public life by such spatial organisation and orientation.[97] Second, it reflected the ideology of people who were deeply influenced by feng-shui principles that dominated their life at that time. They believed in the power of cosmology that controlled their lives and so in turn they should respect nature or the symbolic representation of nature. Thus, while the impetus and the end product of construction of traditional settlement may have been based on the immediate functional and economic needs, the ordering principles of such construction were dependent on the symbolic meaning of man's relationship to nature. These ordering

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[96] Paradigm is a concept raised by Thomas Kuhn who suggests that there would be a paradigm shift if a new theory implies the reconstruction of prior theory and the re-evaluation of prior facts. (Kuhn, 1970:7)

[97] See Chapter 4, section 4.3.3.

principles were inevitably the bases for the formation of such settlements and also served as a cultural framework within which the settlements were built at the time.

As a result, in order to respond to the worldview of the sky-earth-man triadic relationship, the spatial pattern of early settlement always ran in a north-south orientation as the primary axis related to the topography of the city. In addition, the pattern, which was normally anchored by a temple with the linear spatial form as a whole forming a processional route, became a special spatial genotype of the early settlement. Activities were contained by such a genotype of public urban space which included the mix of daily worship, commercial, and defensible functions that created a special cultural sense and collective identity in the traditional community. In such a spatial paradigm the core values of the traditional way of life emphasized the strength and intimacy of family relationships and the existence of primary social relations in the form of close kinship and clan networks set within a particular domain of sub-ethnic and close-bound community and confined by the laws of patriarchal society. Such spatial form was recognized as an autonomous formation with an important spatial characteristic in the distribution of activities and the flexibility of spatial uses for different activities. As mentioned before, the everyday activities such as shops, markets, crafts, ceremonies, were dispersed among various quarters of the city and clustered mainly around the domain of such spatial form. Indeed it truly reflected the quality and function of urban public spaces as formulated by Stephen Carr, Mark Francis, Leanne Rivlin and Andrew Stone (1992:3):

> Public space is the stage upon which the drama of communal life unfolds. The streets, squares, and parks of a city give form to the ebb and flow of human exchange. These dynamic spaces are an essential counterpart to the more settled places and routines of work and home life, providing the channels for movement, the nodes of communication, and the common grounds for play and relaxation. There are pressing needs that public space can help people to satisfy, significant human rights that it can be shaped to define and protect, and special cultural meanings that it can best convey.

Following the timeline of Taipei's historical development, the study has illustrated that the spatial paradigm of traditional settlements was transformed into different spatial configuration in the Japanese colonial period. This transformed spatial configuration could be regarded as the 'colonial spatial paradigm' reflecting the exertion

of the form of dominance, which was explicitly exercised by the Japanese during the colonial period through its superior military and material power. The colonial period reflected the changing and complex nature of urban space itself that experienced a wave of paradigm shift from unity, cohesion, tradition, independency to duality, diffusion, modernization, and dependency. The spatial pattern of the colonial city was then characterized by the combination of the new geometric imperial grid pattern and the old organic pattern of traditional settlement. The production of such a colonial spatial milieu is indeed a reflection of two unbalanced, inharmonious and segregated patterns in the whole system: old vs. new, organic vs. geometric grid, informal vs. formal, and autonomy vs. control. The paradigm shift was a reflection of the corresponding socio-cultural development patterns of the colonizers and the colonised. Specific built forms were dedicated in particular areas and places to fix the colonial identity.[98] The form of dominance rationalized the formation of the imperial grid pattern which was the first modernization of spatial paradigm in Taipei. This spatial transformation let us recognize the uneven and incomplete production of urban space, and the way of contingent thinking on spatial planning. The Japanese spatial paradigm conveyed specific colonial meanings and values and revealed the production of social significance at the time. The new grid system contrasted with the traditional organic spatial form and was characterized by its rigid layout with its lifeless, mechanical and monotonous nature. As a rupture with the past, the colonial grids deconstructed the original spatial humanistic order of traditional settlements.

Basically, the shift of traditional spatial paradigm to colonial spatial paradigm is also a reflection of changing ideology in the concept of urban space and the manifestation of political power by a new colonial empire. Several characteristics are significant: First, the colonial spatial paradigm reflects the colonizer's ideology of dominant power with organized urban space as a symbolic demonstration of the dominant social status and a regulation of social order, rather than as a response of nature as Chinese *feng-shui* principles. Second, the construction of such spatial paradigm displays the military strength and degree of civil modernization that signifies the dominance of the colonial government. Third, the formation of the colonial spatial pattern is based on a system of

[98] See Chapter 4, section 4.4.3.

control rather than an autonomous formation. At the same time, these spatial patterns also reflect the forms of cultural life of the colonizer and colonist.

The transformation of spatial pattern from 1945 to 1988 was a transitional stage following fifty years of Japanese colonization. Taipei became an authoritarian city under the political regime of the time. The spatial pattern of this period can be regarded as the 'first post-colonial spatial paradigm'. It was particularly characterised by a rigid geometrical grid network at the expansion of Eastern zone of the city; within this network landmarks and nodes were distributed according to their functional and symbolic role. Basically, the production of spatial forms on a grand scale and in Chinese style, such as the Chiang Kai-Shek Memorial Hall and the Sun Yat-sun Memorial Hall or a grand ceremonial boulevard like the 77 metre width Yenai Road, reflected a deconstruction of the Japanese colonial image with the aim of reclaiming Chinese ideology in the spatial milieu. A reclaim of spatial identity with Chinese characteristics became politically correct at that time. This new spatial paradigm has led us to an understanding of the spatialization of power over the transformation of integration core in due process. The production of such urban form attempted to legitimize the regime and recall the image of Chinese representation. However, in retrospect, there was a gap between representation and reality; the meanings of such spatial forms were constructed out of a dynamic social dialectic. The spatial formation in this period was not autonomous and liberated but was indeed subject to another form of power representation regulating a new social order and style in the post-colonial city.

Evidence from previous spatial analysis has shown that the revocation of martial law in 1988 provoked another stage of spatial development. The city entered a new realm of spatial representation, which can be regarded as the 'second post-colonial spatial paradigm', as characterized by new dominant spatial forms and patterns in the Eastern zone. Most of the blocks east of the original, older city core are characterised by supergrid patterns with larger parcels assembled for the bigger development increments which are typical today. The increasing scale of development parcels, combined with the varied renovations and modernizations within this period, makes for a city building stock of heterogeneous styles and scales. Within the heterogeneous context, it is clear that a

new spatial genotype naturally evolved in the new urban areas of the Eastern zone which are alienated from the old settlement. Supermalls or skyscrapers with privatised public front-squares or inner courtyards, such as the Core Pacific Life Mall and NewYork NewYork shopping mall or 101 Financial Centre, dominate the new urban scene with their multi stories, massive scale and image. They become the hegemony of spatial representation and deliver a new type of daily life experience, in sharp contrast to the market-street life of the past. This differentiated pattern, the result of transformation over space and time, can be explained from the perspective of the measurement of syntactic properties in terms of depth relationship between each urban space and integration values of the whole configuration. It exhibits a message of the shift of centrality which is operated by means of depth changes and by dividing a totality into two that stress one side (the new urban area) over the other (the old settlement) in the whole spatial structure.

The results of integration studies have told the story of present spatial phenomenon. The high value of global mean integration (RAn) for the old settlement area (Wanhua = 2.1093) indicates that the area is less integrated and more segregated than the new urban area (Dian = 1.5979). If we compare the axial maps of these two study areas, the differentiation between them is clear. The integrated core in Wanhua forms an upside down tree-like pattern across the area, thus linking the centre to the major access of the area (the Wanhua train station) but leaving zones of segregated and inaccessible spaces on either side of the integrated core. The location of the integrated core of Wanhua indicates the asymmetry of the spatial layout as well. (See Figure 5.25a and b in Chapter 5.) In comparison, the integrated core of Dian is formed by a cluster of integrated lines which spread through the centre of the area. These long lines link the centre to the peripheral areas, with less broken-up urban public space. (See Figure 6.14 a and b in Chapter 6.) As a result, the spatial pattern of new urban area has greater regularity, and fewer segregated zones. An examination of convex maps confirms that the new area has more convex synchronized urban forms than the old settlement area. The lower value of the degree of convex articulation for the Dian district means that the open space system of this new urban area is less broken-up than the old Wanhua district (0.0924 against 0.1242 respectively, see Table 7.1). No doubt this is one of the spatial characteristics of a second post-colonial spatial paradigm. If we recall the mean values of global integration

of the city as a whole, the decreasing values from the years of 1945 to 1998 (see Table 5.9) have vividly demonstrated that the transformation of spatial patterns over time tends to become more integrated and permeable in relation to the depth change and the shift of centrality towards the new urban centre to the east. It is noted that the present predicament of the old city centre is underpinned by the fact that the old spatial paradigm is subverted by the new supergrid spatial configuration and the loss of spatial centrality to the east.

In reality, the new spatial paradigm has alienated other spatial configurations and inscribes virtual boundaries between them. This new paradigm sustains itself and shows different forms of lifestyle as evidence of the representation of spatial centrality. It indicates layers of occupational uses that are different from the old area in the west. Urban built forms here emphasize a radical separation between life within the building and the life of the street. It emphasises the privatization of urban space. Such emerging new urban forms also reflect the behaviour of city dwellers nowadays. The spatial character of the present urban environment has been transformed. However, the old urban forms have served us well in understanding the present urban form and the reason for the changing structure of the city. The phenomenon once more highlights the disintegration of spatial configuration between the old urban centre and the new urban centre of the city. However, this new spatial paradigm gives the present urban space elbow-room for re-thinking the representation of place.

Syntactic properties		(1) Wanhua (old) (11 sections)		(2) Dian (new) (11 sections)		Mean values	Notes
Total Area (hectare)		885.22 (3.26%)		1,136.14(4.18%)		----------	Taipei (27,179.90ha)
Population (persons)		209,780		319,003		----------	Taipei (2,639,939)
Male	Female	107,242	102,538	155,269	163,734	----------	
Density (per km²)		23,698		28,078		25,888	Taipei (9,713)
No. of households		69,193		109,055		89,124	Taipei (869,803)
Total Plots		29,429		28,077		---------	
No. of Building sites[99]		24,358		20,842		---------	
No. of park & green field		59		38		---------	
Buildings		7,714		10,432		----------	Total buildings in Taipei = 238,735
No. of trees		4,123		14,264		----------	
Convex spaces (C)[100]		958		964		961	
Axial lines (L)		869		990		929.5	
Islands (I):		520		1000		754.5	as a block of continuous buildings completely surrounded by an open space
Thoroughfares		10		14		12	
Deadend/Cul-de-sac		313		253		283	
Thoroughfares/deadend ratio		0.0319		0.0553		0.0436	

Table 7.1: A comparison of basic syntactic measures between Wanhua and Dian in 1988

Measures of convexity	Wanhua	Dian	Mean values	Notes
Convex articulation	0.1242	0.0924	0.1083	
Convex deformation of the grid	1.8821	0.964	1.4231	
Grid convexity	0.5795	1.1040	0.8418	

Table 7.2: A comparison of convexity between Wanhua and Dian in 1998

Measures of axiality	Wanhua	Dian	Mean values	Notes
Axial articulation	0.1127	0.0949	0.1038	
Axial integration of convex spaces	0.9071	1.0270	0.9671	
Grid axiality	0.0542	0.0659	0.0601	the comparison of an orthogonal grid/the no. of islands

Table 7.3: A comparison of axiality between Wanhua and Dian in 1998

Numerical properties	Wanhua	Dian	Mean values	Notes
Convex ringiness	0.2664	0.5200	0.3932	
Axial ringiness	0.2937	0.5063	0.4000	

Table 7.4: A comparison of ringiness properties between Wanhua and Dian in 1998

[99] Including land for temples, shrines and misc. purpose
[100] The convex space is defined as the widest space of the open space structure in the city.

Syntactic measures	Wanhua	Dian	Mean values	Notes
Integration	RA1 Mean=2.1093 RA3 Mean=1.0873	RA1 Mean=1.5979 RA3 Mean=2.5208	RA1 Mean=1.8536 RA3 Mean=1.8041	Integration is a measure of quality for urban areas. It correlates with the movement pattern of an area.[101] Smaller RA values indicate greater integration.
Intelligibility	$R1^2$=0.2107 $R3^2$=0.7110	$R1^2$=0.3217 $R3^2$=0.6608	$R1^2$=0.2662 $R3^2$=0.6859	It is the relationship of connectivity and integration in urban areas, i.e.: R^2, [102] connectivity/ integration ($0<x<1$)
R^2 (the coefficient of R3/R1)	R3/R1=0.4213	R3/R1=0.5993	R3/R1=0.5103	The relationship of local integration and global integration in urban areas
Mean depth	6.1164	4.8768	5.4966	

Note: The measurements of syntactic properties are based on the 1998 Taipei city base map and on the Statistical Abstract of Taipei City. Other source from the website: www.tala.taipei.gov.tw

Table 7.5: A comparison of integration, intelligibility and mean depth between Old Wanhua and New Dian Districts in 1998[103]

7.3 Two Faces of a City: Spatial Difference

Despite appearances, this study has shown that there is mutual co-relation and reciprocal reinforcement between the global supergrid and the local deformed grids. They are the twin effects of a reconfiguration of the balance of power between centrality and fringe reducing the former to a focus that dominates the spatial organisation as a whole. They attain their meanings in circumstances that derive from contradictory, asymmetrical, yet at the same time, mutually reinforcing ways. Their spatial characteristics are as summarized in Figure 7.1. The study has revealed that spatial identity is generated from conflict and difference and is a product of historical conjecture.

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[101] It is analysed by the linear regression model which is a form of statistical analysis used for forecasting. Regression analysis estimates the relationship between variables, so that particular variables can be predicted from one or more other variables.

[102] R^2, known as the coefficient of determination, is an indicator that ranges in value from 0 to 1 and reveals how closely the estimated values for the trendline correspond to the actual data. A trendline is most reliable when its R^2 value is at or near 1.

[103] Data based on 1998 Taipei Statistics

Spatial characteristics	Old Settlement Area (Western)	New Urban Area (Eastern)
Dimension of grids	A mixture of small and deformed grid pattern	Supergrid pattern
Form of grids	Political form of grid pattern	Economic form of grid pattern
Change of Spatial relationship	Before 1980s, it was the core of the city. After 1980s, it became the peripheral region as the centrality shifted to the east.	Before 1980s, it was the fringe area. After 1980s, it replaced the old centre to become the core of the city.
Representation	Colonial form of space	Post-colonial form of space
Spatial value and ideology	Localized with traditional sense	Dominated by global sense
Social mobility/order	Flexible/complex	Rigid containment/simple
Cultural tone	Humanistic oriented culture	Consumer oriented culture

Figure 7.1: Difference of spatial characteristics between the old and the new urban areas

7.3.1 Tradition Vs Modernity

The case study of Taipei exhibits a complexity of spatio-cultural landscape, which is shaped by both tradition and processes of modernization. The question of whether to preserve the traditional spiritual values and beliefs and the historical physical attributes in the modern society is often controversial.[104] People doubt the value of tradition in modern society because they tend to agree that modernity, as reflected in David Harvey's statement (1990:12), is 'the development of rational forms of social organization and rational modes of thought promising liberation from irrationalities of myth, religion, and superstition'. The process of modernisation has destroyed the basic values of traditional society, which was subject to the notion of 'Confucian ethics', namely, the combination of 'culturalism' and 'familism or patriarchism' (Chen, Chi-nan, 1998:90). These basic values such as 'Three bonds'[105] and 'Five ethics'[106] are the norms for people to follow in traditional society. Thus, the traditional cultural forms of space were subject to their

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[104] For example, for more than a decade the city government and local residents have argued about the redevelopment of Tihwa Street in the Western District. It is an historical street with Baroque facades, and was built by the Japanese in the early 20th century. Most of the community residents refused to preserve the original two storey-height buildings, which they thought would deprive them of their economic advantage.

[105] The hierarchy order of three bonds (San-gang) in traditional human relations is: ruler and minister, father and son, husband and wife.

[106] Five ethical relationships in traditional society in descending order is as follows: sovereign and minister; father and son; husband and wife; elder and younger brother; individual and friend.

social norm and political ethics. All the built forms, such as types of roof, heights of platform, decorations, and internal spatial arrangement, were defined by such principles.

The Confucian ethical order was a rule to guide people. These social norms have regularly determined the arrangement of spaces with ritual purposes in traditional society. However, the impact of modernisation, which has weakened this ethical order, signifies new meanings for the contemporary built environment. Lacking in self-awareness, this process has gradually transformed our modes and customs of moving and styles of living. The new urban built form continues to displace the old-style urban form with its temple, courtyard house or shophouse. The family ties and communal relationships become weaker as a result of spatial transformation, leading to a fast deterioration of traditional urban spatial quality and discontinuation of historical spatial context in the contemporary urban landscape.

The study of the traditional settlements of old Wanhua has revealed that the traditional values and cultural beliefs and socio-economic conditions played a decisive role in ordering and shaping traditional urban form. It is easy to see that the narrowness of the early street patterns, with their covered arcades, tempered the heat of the hot climate. The street patterns were always connected to the cultural form of temple space or institutional and public buildings, which were always present at the deepest core of the whole spatial pattern. Evidence has shown that the intimate, small scale of these urban forms made them popular places for people to gather. The temple square was once more of a festive space, with parades performances, people chatting, sitting and eating, bustling with urban life.

On the contrary, new architectural styles, scale of buildings, and a new pattern of streets in the new Eastern zone symbolise modernity. No doubt modernity has projected its sense of historical progression onto space. It is ironic that the notion of modernity usually assumes 'progress' but in terms of spatial quality this is not necessarily the case. For example, the modern spatial pattern in the Eastern area scattered with clumsy heavy concrete towers and glass boxes seems to be out of context and has absolutely nothing in common with the old fabric of the West. The new Eastern zone is largely occupied with

the image of mega-corporations with taller and bulkier skyscrapers. The place is an illusion of progress, but empty of meaning.

Every urban form has its own social value in its own period. Every urban form in every context has relations to the past as well as to the future. The past is a projection as well as a determinant of the present, as spatial forms are transformed over time. Tradition is not just a handing over from the past; it also offers a notion of 'the growth of tradition' in modern society (Gadamer, 1975:250). So it is important for the modern society to take tradition as a base, as tradition is 'the ground of our validity' (ibid., p.249). Tradition and modernity should not be seen as static and individual entities, but as relative concepts in a dynamic relationship. The future is always written into the recollected past. The reworking of the past plays a crucial role in our sense of who we are. Certainly, the desire of a good city in the future already exists in the imagination of the past. As shown from this study, a balancing act between tradition and modernity can encourage the solidification of a distinctive local socio-cultural context in integration with global character in modern society nowadays. In conclusion, I would like to draw on the words of Kim (1983:4) who aptly claims how to make places by considering:

> .... that the right direction for the development of [Taiwan in the future] should not fall into a position of 'traditional isolation', and should also not mindlessly incline to the Western. ..... There is only one way for the future development of [Taiwan] that is the modernization of [Taiwan]. Indeed, this is also the only direction for [the revitalization of] all the old societies in the world.....[but] the future of [Taiwan] should be built in a state of modernisation infused with Chinese classical tradition. [107]

7.3.2 Global and locality

Space and culture are squeezed and deconstructed in this age of 'time-space compression' (Harvey, 1990, 1993). New forms, new rhythms or new impetuses different from old things of the traditional society are produced on the basis of globalisation. The spatial pattern of the present Eastern district stands in the global geopolitical grid which is liberated from the canons of tradition. Local character is forced to be submissive to the dominant trend of globalization. Globalization denotes an expansion of perspective,

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[107] The original text is in Chinese and is translated by the author.

which interferes with the local culture and the daily life of society. According to Harvey (1993), it is primarily characterised by the flow of capital accumulation on a world scale to effectively transform the spatial design of the local physical habitat. It is clear from this study that the conflict of global and local characteristics has raised a question of cultural sensitivity and self-identity in the present spatial environment.

In the case of the Eastern district, the study indicates that the globalization effect has broken through the traditional concept of place bound with restricted boundary and encourages the global connection in terms of cultural exchange and economical activities. The globalization effect has diluted the local character and also weakens the solidarity of the local community. It dictates our daily life and social behaviour in contemporary consumer-driven society. It is reflected in the super-grid pattern. The super-grid pattern forms quarters of mixed-use areas, which are constituted with major transport arteries. In the axial analysis, they are the most integrated lines in the district. The spatial landscapes along these particular spatial arenas are configured by multi-storied buildings, which are tall or compact enough to create the strong vertical image of modern urban areas. The insertion of these particular types of urban spaces in the city has transformed the spatial character into something different from the old city centre. Super-malls, large department stores and chain stores within the shopping streets of this district constitute the post-colonial form of urban space for the realization of capital control. In terms of social mobility, such global forms seem to favour a particular social group, as those spaces are increasingly reliant on heavily-automated surveillance and guards who will exclude shabby-looking locals.

The study has made clear that the ignorance of traditional local culture and social respect in the construction of urban spaces has caused two problems in the present spatial environment of Taipei. First, the image of Western architectural style is a problem in the local environment and does not seem to fit well with the local socio-cultural context. The superficial global urban forms just end up with confusion and misrepresentation as a thoughtless reflection of eclectic parodies in the spatial environment. Global urban forms on a grand scale replace the local sense of urban space with its small and intimate scale. Second, the problematic image caused by globalization is a reflection of the 'cynic

consciousness'[108] implicit in local society. This consciousness is an epidemic common in late-capitalist commercial society. The extension of this attitude to local built environment has caused a seductive but decisive drift towards a kind of 'tawdry pathos' that has dominated Taipei's present spatial environment (Frampton, 1994). The problems as Paul Ricoeur indicates are:

> [globalisation] constitutes a sort of subtle destruction, not only of traditional cultures, which might not be an irreparable wrong, but also of what I shall call for the time being the creative nucleus of great civilizations and next culture, that nucleus on the basis of which we interpret life, what I shall call in advance the ethical and mythical nucleus of mankind. There is the paradox, how to become modern and to return to sources; how to revive an old, dormant civilization and take part in universal civilization…
>
> (Ricoeur in Weijen Wang, 1998:99).

From this perspective, it is necessary to think more deeply on local values. These values need to be read from the essence of 'Things-in-Themselves'[109] which are inner and underlying structures, and can be found from the genotypes. They reflect the reasons of spatial construction and elements of culture, such as forms, beliefs, images of persons and events, daily life activities, practices and institutions within the scope of local context.

The formation of genuine identity in the spatial environment is a continuous growth process that allows identity to be transformed and adapted in between local culture and global culture. But if the concept of globalisation is used only as a formalized tool without local awareness, there would be no meaningful relationship between the building designs imposed by global culture and the local urban fabric as a whole. A sense of place can only be established with conscious of cultural sensitivity and be dedicated to socio-spatial form specific to locality. Otherwise, the local built environments would only end up being empty and characterless, and lacking in substantial meaning.

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[108] Towards the meaning of 'cynic consciousness', it is a normal consequence of capitalism in its mature condition, but it is a kind of false consciousness imbued with enlightenment. (Kim, 1983)

[109] According to Kant, 'Thing-in-themselves' includes three layers of meanings: a resource of sensibility experience, a foundation of phenomenon, and independent existence out of our consciousness. The nature of 'Thing-in-themselves' is objective (See Lee, 1996:260).

7.4 Identity Construct

The study of historical spatial transformation and the bipolar regions of Taipei have led us to understand that self-realization and identity formation need to take place within a material as well as ideological context. The study of these two districts is crucial because spatial identity is defined and affirmed in difference, as Derrida (1984) asserts, the difference which opens up appearance and meaning. Identity depends a great deal on origins, including those of family, religion, ethnicity, age and gender groups in association with place. These origins are dependent on certain material contexts, principally location and a cultural milieu which contain localized artefacts. The living urban spaces exist as representation and projection of different quarters of the city that concretise the identity of places as well as the differences between them. The study shows that the identities of two different districts constitute, shape, and create the very spaces and temporalities of the city. For example, the randomly heterogeneous and fragmentary urban space in the Western district seems to go beyond our capacity to organize our experience of culture in a coherent and meaningful manner if we do not have a holistic view, which involves the transformation of a cultural system of space internal to the locale. On the contrary, the Eastern district represents a new spatial system embedded with globalized culture and characterized by its monotonous and homogenous grid pattern. Such spatial representation makes possible two wholly different sets of meanings and social practices – one set for the old quarter and another set for the new quarter. In turn, these identities transform the very spaces they inhabit, shifting their appearance and atmosphere at different times of the day.

Findings from this study also indicate that activity patterns are greatly influenced by the socio-cultural features of the community, which distinguish and differentiate spatial identity. This has been proven in the type and frequency of movement activities and their locations, which vary according to gender (male and female), age group (children and adults), and gate area. The study of activities also indicates how different spatial uses encourage diverse patterns of behaviour. The spatial identity is embodied with a behavioural order defining activities, timing and locations. It has shown that the

change of underlying rules, meanings and functions of urban spatial form is in accordance with the modification of the activity patterns encouraged by specific groups.

According to this study, evidence shows that identity is built on difference through transformation over time and space. It is clear that identity depends a great deal on origins. The 'urban form' in which we live, move and have our experience, is itself shaped by the way in which we live, move, and encounter, and this is indeed shaped by our 'culture' in all its historical depths and regional riches. The 'culture' embedded within urban forms makes sense of our experience, distinguish these forms as meaningful to us, and differentiates these forms from others.

7.5 A common ground: a reflection of centrality

This study seeks to explain the layers of spatial transformation over time. It reveals that successful urban public spaces always posit themselves in a theatre of memory and a stage of spatial crystallization and continuity. Layers of reality are deciphered to expose the uniqueness of place and the continuity of spatial difference. A network of spatial messages flows between the spatial patterns. The differences not only reveal the deep structures of these morphological patterns, but also let us understand why they are formed and the reasons behind their formation. It is clear that the measurements of syntactic properties deliver significant information on spatial characteristics not only their structural depth values, but also the formation of these structures. A social logic of spatial formation is induced in the setting of transformation. A sense of centrality is a common phenomenon of such transformation as reflected from the evidence of the main constituents of the integrated cores in terms of occupational uses, rate of movement patterns, relative position and permeability of such spaces. The transformation of the integrated cores will continue until they obtain stability and a sense of frictionless harmony in a state of centrality.

The study has made it clear that through the process of spatial transformation a spatial centre is always re-configured in *a priori* and transcendental way different from the fringe areas. The spatial centre reflects its prominent position with functional and

symbolic meanings in the whole spatial structure. Upon the examination of the shift of integration cores over time, the significant changes in the morphology of Taipei city in different periods of spatial development have demonstrated the strength of culture affecting the specific and circumstantial arrangement of the spatial organization of everyday life. It is also clear that the underlying direction of spatial transformation in the urban centre is basically driven by two factors: a representation of 'power' – it is always a reflection of political intervention on the reconstruction of urban space, or in other words, the dominant ruler always challenges the spatial paradigm laid down by past political entities; and a representation of 'ideology'. Consequently spatial construction is due to the execution of ideological practice, either referring to cultural ideology or political ideology in society. These underlying forces have significantly affected the formation of socio-cultural space in the urban centre of Taipei. Over several centuries the urban centre of Taipei has experienced a process of transformation that demonstrates the interaction between urban spatial structure and centrality that can be explained on the basis of same generic rules.

7.6 Conclusion

Traditional space is experienced as alien, as a past that has been lost – but must be regained. It should be reclaimed and integrated into modern capitalist society. A new cultural form of space need not rely on imported second-rate models and inferior copies worse than the originals. The new form must select critically what is appropriate to the local context. To be sure, the image of the cities in Taiwan cannot be reduced to the skyscraper. Instead urban form should be made to blend in with the existing urban fabric, to encourage an integrative approach to place-making instead of merely distributing the game pieces over a basic checkerboard.

This study has provided a view that would fill the gap of knowledge in place-making by critically reading the deep structure and spatial character of urban public space over time. If we cannot understand the inner nature and deeper structure of the place, it is just like entering into a labyrinth that will entrap us in infinite turns and detours, wandering aimlessly and becoming lost in an external aspect which reveals nothing of its

internal structure. Deciphering the underlying structure has revealed that the spatial transformation of Taipei city over time indicates a strong link to the social structure and daily life within the urban settlement. It shows how urban spaces operate in a logical pattern not just on the basis of their formal properties and their assigned functions, but also the way they are embedded within the global configuration and functions of the city. The spatial transformation has occurred in relation to the shift of spatial structures within the socio-cultural base of the city. The occurrence of such structural patterns is seen to be generated through the resolution of the conflicts between (a) the dynamic state of people's daily activity manipulated by the forces of symbolic and value systems and (b) the substantive spatial depth of urban form continuously changing in relation to the shift of modification in the urban centre. Each transformation has occurred with a restructuring of totality in space. And this spatial restructuring in turn modifies the individual spaces and their relationships within the whole. It is important to understand the place as a dynamic and three-dimensional figure with new meaning and configuration, in Rykwert's word, 'to follow and inflect its process of self-generation; to knit and extend its fabric requires a humane discipline ….., and a historical reassessment of the city.' (Rykwert, 2000:246.)

CHAPTER EIGHT: CONCLUSION

CONTENTS

Chapter 8: Conclusion

Place captures space by registering our times, embodying our identities, and reflecting our lives.

(Short, 1996: 492)

8.1 Prologue

The previous analyses have shown that an authentic place has to be built on the roots of its historical and cultural qualities, and needs to be closely articulated with local social activities. Given this condition, urban space would become more meaningful and liveable with a spiritual sense and, in particular, would avoid being purely the concern of material formation which has led to the present spatial anarchy in Taiwan. The findings justify the aim of this thesis which is to explore the interactive relations between spatial configurations and daily life patterns in order to gain an understanding of the mechanism of spatial transformation and the underlying structure of urban pattern in association with the socio-cultural meaning. Such an understanding together would provide direction for planning urban form and space in future urban design, in particular the new urban condition of Taipei city in the 21st century.

Broadly speaking, the study provides a conceptual framework for a process of spatial demystification. This framework would act as a prism to view the world as if it is a purposely ordered systematic whole and would refine our thinking on place-making. The analytical framework is seen as an effective apparatus for reviewing the mechanisms of spatial transformation and helps to re-appraise the spatial identity of the place. Through the knowledge gained from this understanding we can readapt and re-establish an appropriate process for place-making in the future. The framework also enables us to realize that the construction of authentic place is not purely to encounter the past. (This is not a matter of nostalgic built form and space or mourning its loss.) But the place should take into account a deep structure of local social and cultural contexts, which are crucial to the production of urban forms. In Derrida's terminology (1978), the deep structure in these contexts can be taken as a form of 'text' for critical reading. A thorough analysis of such text would help to aptly reclaim the present place with appropriate character and authentic local identity. Specifically, the study would enable us to understand how to make a desirable living place

by tackling two questions, namely, how urban space is formed and why urban space is transformed. The study identifies the appropriate choice of value, quality and identity in a specific place and uncovers the deep structure and genotype of urban configuration in the city.

This chapter summarises to the findings of the study in response to the theoretical issues and the questions which have been raised at the beginning of this study. In short, this study leads us to rethink the future of urban 'place-making' with the help of a critical process of investigation in spatial transformation. This critical process will provide a platform to look at the city from a global scale and context, together with the experience of exploring spatial relationships of smaller areas.[110] This combined outlook offers a clear insight, understanding and evaluation of spatial construct for design professionals and policy makers with positive thinking and attitude towards future city planning and urban design. Finally, we will have a brief discussion of future research in this particular field.

8.2 Main Research Findings:

This research identifies four major aspects which contribute to knowledge of place-making by demonstrating a successful urban place. The findings are that the successful place is not only defined as a central urban place which aims at the highest level of attractiveness in space, but it also possesses a strong sense of local identity and character, that is 'a sense of place'. The evidence can be seen in most historical and newly transformed places which are successful in the concentration of social activities related to the times and rhythms of everyday life.

First, the research delivers a deeper understanding of the structure of spatial configuration rather than mere recognition of superficial spatial phenomena. Plato has highlighted the importance of a deeper understanding of inner structure and spirit to our knowledge. In his view, 'we know very little about a thing if our knowledge is confined to shadows or images of it or, for that matter, to its superficial appearance' (Plato, Book Six, 1987, p.310). The research discovers that the spatial transformations themselves provide

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[110] Understanding the relationships between global and local contexts is clearly demonstrated by the space syntax analysis which uses graphs to assign values to spatial elements and reflect their relationships to other elements in the system (See also Hillier, 1996 and 2004).

evidence for certain constituents; the same underlying structures recur in a number of spatial formations, suggesting that genuine genotypes are being captured. The genotype, as described in space syntax, is the fundamental and intrinsic property of the spatial structure of the city, which allows us to understand its emergent structure, and to account for its constructive functional logic and impacts (Hillier, 1984, 1996, 2004). The genotype is presented as graphical representation, which offers us a direct insight into the sociological structure embedded within the spatial system and reveals the core of the spatial structure.

As demonstrated in previous analyses, the representation of urban public space as a graph was a two-step abstraction, i.e., a discretization of the continuous urban public space into a configuration of individual elements, and a mapping of such space into the graph which subsumes several topological elements such as those of enclosure, in-between-ness and so on, within the graphical structure. The structural representation is formed as either ringiness or tree-like patterns which reflect the order and layering of spaces in accordance with the relationship between the global structure (between clusters of spaces) and local structure (within clusters of space) respectively. Evidence shows that there is a difference of basic genotype between the spatial configuration of the urban centres of traditional settlement and the modern urban spatial centre in terms of depth structure, which depicts clearly that the genotypes of the old urban centre are deeper than those of the new urban centre. Their difference is related to social implication which responds to the internal social mechanism of the daily life generated from the local context of a place. This mechanism reflects a combination of functional requirement and socio-cultural value which together are essential to the formation of cultural genotype, which epitomizes the logical relationship between social and spatial structure.

The genotype of the old urban centres comprises the spatial form of temple space in articulation with narrow market streets, which together form a spatial unity. This genotype has two significant aspects. One aspect is that this unified entity is clearly the core of the spatial domain. It dominates the spatial structure of the domain and ensures the stability of the genotype by fixing their range of integration. The other aspect is that the centrality of this unified entity establishes the domain as a cohesive neighbourhood. The pattern of the unified entity and a sense of centrality recur in each of the spatial domains in the old city.

In retrospect, the domains formed the structural unit of the traditional settlement and gave identity to the old city as a whole. The domains were not randomly distributed or formed within the whole spatial structure, but instead they were linked together according to the following rules.

1) The spatial domains were attached to each other only through the functional and spiritual core; the temple space served as the collective place with the domains inter-connected by main market streets. This connection almost invariably appeared in the spatial configuration in different stages of the old urban centre.

2) The system of connection was regulated by the traditional culture for patterning socio-functional activities and accesses, which focused on the daily life of the socio-political centre (temple space) and emphasised the seclusion of residential quarters for sustaining kinship and cohesion of the community.

3) The spatial connections were extended in different directions by a well-connected and organically- formed network of main streets, which formed the asymmetrical spatial pattern, and responded to the deeper structure of the genotype of the old urban centre. For example, the mean depth of Lungshan Temple is consistently greater than other urban public spaces over different periods. The deep position of the genotype was autonomously placed in response to traditional feng-shui culture which was often followed by inhabitants in their daily life. Its location was the result of a concerted strategy: a strategy of appreciation, order and orientation designed both to keep the centrality of spiritual place and to lead in the public. This pattern of connecting network shows clearly how the flow of daily life within the old urban centre is absorbed and controlled by the spatial form of temple space in line with main market street. This is the key element guiding activities, defining permeability, and maintaining a configurational order of the whole spatial system.

In contrast, the changes of depth values identified here show that the spatial configuration of the new urban centre has a shallow grid pattern (The mean depth of new Dian area is 4.8768 compared with the old Wanhua's 6.1164, see Table 7.5.) A genotype is composed of the modern mega shopping mall, very high office tower and grand boulevard,

which dominates the post-colonial space and typifies the new urban area. The genotype has a shallow depth value relative to other urban spaces of the city and converges to become the new spatial core in Taipei today. The new genotype is symmetrical and meshes with the super-grid. The spatial organisation of the traditional city based on distinct domains is totally neglected here. Instead the spatial evolution of the new urban city is shaped in response to the present socio-cultural life pattern and economic production. The new spatial form is a product of the post-colonial society. The emphasis of a 'vertical city' is imposed on its imperious grid rather than maintaining the horizontal quality of the traditional city. In short, the difference between the genotype in the old urban centre and the genotype in the new urban centre can make the city a dualistic phenotype: intimate/grand scale, associated/isolated unit, asymmetrical and symmetrical, autonomic/intervened and local/global spatial characteristics.

Second, the traditional and contemporary quarters differ in their syntactic values, such as integration value or intelligibility value[111], which indicate variations in the ordering of spatial configurations in the city and different rules of growth. (See Table 4.5 and table 6.5.) The values also explain an intrinsic process of spatial transformation and reveal the underlying structure of spatial configuration in each period of urban development in the history of Taipei (as is the case in the old Wanhua area). The analytical results illustrate the relation between the two orders of reality and the permeability of each space to all spaces in these two quarters. Both of the results help to capture the way people can learn about large patterns from their experience of small parts and the difference between them. Moreover, the different values, interpreted here as a statistical description, illustrate degrees of 'truth' or genuineness in what is apprehended; the totality of the city appears as a form of competitive opposition to hold it together, a dual structure. The change of these values entails classifying objects in terms of time and space and is signified by the representation of the syntactic graphs. The syntactic graphs show the

[111] I would like to recall the meanings of intelligibility and integration here, as details explained in Chapter 3. According to Space Syntax theory, 'Intelligibility is the degree of correlation between connectivity and integration that exists in a system of spaces connected each line to others, i.e. how many immediate neighbours it has intersecting it, and how integrated it is into the system as a whole. We call this measure intelligibility because the number of lines intersecting a line can be directly seen from that line, while the property of integration cannot be directly seen since it expresses the depth of a line from every other space in the system, most of which will be invisible' (See Hillier, 1989:14).

correlation of syntactic values which decipher two intrinsic aspects explaining the orderings of spatial structure and the rules of growth.

The first aspect is the low values of integration (e.g. 0.3066 in 1998) and intelligibility (e.g. 0.1900 in 1998) in the traditional quarters, which indicate the order of spatial pattern in the old city irrespective of man's ordering of it. Instead this order is formulated in response to the natural cosmological and feng-shui forces for evolution and transformation of the environment, in contrast to the modern city in which man imposes a finite idea upon the ordering of space. In this perspective, the ordering of the spatial configuration of Taipei can be classified into two categories:

1) The low value of intelligibility in the organic and deformed grid pattern of the old city[112], which suggests that the process of spatial formation is a somewhat cyclical and evolving change based on the relationship between culture and nature.

2) The high value of intelligibility is the result of the contemporary planned unit development (PUD) which is characterised by its gridiron spatial pattern.[113] It is a one-time product imprinted with the grand lines of urban fabric in which modernity manifests itself.

The second aspect is that the spatial centricity clearly plays an important role in shaping the urban forms of the city. The shift of spatial centres over time has caused the deconstruction and re-construction of spatial patterns of the city. For instance, the integration core of the old quarter is shifted by the growth of the urban grid in the periphery. In response to the pull of the periphery, the historical core is displaced towards the edge of the city. Although the historical core retains its spatial significance as a local centre, a new core evolved at the expense of the original spatial structure. In fact, the increased syntactic values in the new quarters suggest that the new spatial pattern is

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[112] The analyses of organic or irregular morphological pattern of traditional settlements by other studies provide evidence that the results of mean intelligibility are consistent with the low value. Examples of such old organic towns with the low mean values of intelligibility include such as 0.3503 for Anatolian fortified towns in Turkey (see Kubat, 1997), 0.45 for Keryra and 0.54 for Mytilini in Greece (see Peponis et al., 1989).

[113] Previous studies of some cities indicate that these results consistently occur with the high mean values of intelligibility for modern grid structural patterns. Cases include such as 0.76 for Thessaloniki, 0.770 for Larisa, and Kypseli area of Athens in Greece (see Pepinis et al., 1989).

differentiated from the old spatial context and signal a discontinuity from the past. The growth of the traditional quarters was controlled by the ecosystem of 'spatial domains' which could address the needs of the people within their boundaries and regulate their growth based on social sustainability. Social sustainability was taken as the social measures which were needed to prevent social disruption or ethnic conflict which often happened in the past. In contrast, the growth of new urban quarters is regulated by means of economic sustainability in response to new spatial and social reality. New urban forms emerge in the context of the 'network society', which, as Manuel Castells (1996) points out, is the formation of the struggle between a culture of local places and the international culture of the 'space of flows'. The new urban forms are distinguished by a pattern of monofunctional, and culturally and socially homogenous enclaves: residential districts, office blocks, and shopping centres.

The difference between these two quarters reflects that the transformation of the old urban quarters is a process of gradual incremental change in contrast with the synchronous development of the new urban quarters. The subtle transformation of the old centre has prevented a radical deconstruction of many historical vestiges and artefacts and minimized the depletion of environmental values. Thus the identity of place is authentic with the historical continuity of spatial production. The bonds between the socio-cultural events and urban forms need to articulate with each other and fitted into the local context in order to make the city meaningful and readable.

Third, the prime cultural features of the old and new urban centres are formed as a historical conjuncture of colonial and post-colonial socio-cultural products, which are reflected in different types of spatial forms and patterns across the periods. However, the prime cultural features are not simply physical properties such as types of streets and squares or built forms such as the old city walls, gates, temples, office towers and shopping malls. Evidence suggests a formulation of cultural features which have flourished under conditions that include a 'belief or ideological system', and 'social properties'. A belief system validates a particular way of life with a set of values related to particular time and space, and is a representation of power or political statement in a particular period. On the other hand, social properties refer to shared rituals, celebrations and daily life activities which give shape to a rhythm of collective life. Both conditions are

essential to shape the prime cultural features which give space for a strong identity and character, attribute symbolic significance, and become the soul of the place. In other words, the relationships between cultural features and the use and the socio-cultural meaning of these spatial forms are a long term and typological in nature. The formation of these cultural features over time is a legacy of regime change and struggle between different groups of people who have been attached to the place.

Given these conditions, the formation of the spatial forms which have appeared in different typologies can be linked to the socio-cultural context, and acknowledged to be the products of historical and political transformation. Different spatial forms revealed their meanings of being, values and historical experience beyond the form and pattern (See Fig.8.1). For example, the layout of the colonial grid is actually a reflection of the move to establish the rules before they become unconscious and embodied in everyday practice. It is a reflection of 'power' struggle over space, as seen in the change from organic linear form to a small grid pattern. Power is seen as the ultimate determining factor in the production and transformation of spatial forms. Short argues that, 'Power is built into the way we organize space. Spatial organization reflects and embodies the operation of power, its distribution, and its presence' (Short, 1996:410). The influence of power change over space has caused an uneven spatial development and transformation of the city's space, such as the shift of the spatial centre, which is a reflection of a struggle over identity, involving the regime change, different ethnic groups, and the individual.

The action of dismemberment of any cultural links to previous regime reflects on the events of spatial deconstruction and re-construction, as in the cases of the Japanese who tried to uproot the traditional Chinese culture and customs in Ch'ing Dynasty during its fifty years' colonial period. Here power worked from the top down, with the colonizer at the apex of the pyramid, to ensure all colonial ideologies which could be carried out on the spatial planning of Taipei. In the past, the family was the basic unit of spatial production in traditional city. The orientations of functional spaces within the buildings, such as shophouses or courtyard houses, were arranged according to the hierarchy of family structure and the social relationship between the family and the community, which

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[115] See also chapter 4, p.111.

Typology of urban spatial form and pattern	Places	Periods of formation and transformation	Functions, shape and activities	Cultural and social meanings	Belief and ideology
1. Organic traditional city 1 1 Linear narrow winding street 1 2 Temple square 1 3 Courtyard space	The old urban quarters. Mengchia, Tai-to-ch'eng, Inner walled city	● Pre-Ch'ing period· i) Ruled by Dutch (1624 – 1661), ii) Ruled by Koxinga (1661 – 1682), ● Ch'ing Dynasty (1683 – 1894)	● Highly irregular shape ● Asymmetric form of street space enclosed by shophouses at two sides It was a mixed-use market street ● Communal square holds religious, ceremonial and economic activities	● Family unit and clan structure determine the social life of the community that is the force behind the generation of traditional built form. ● Cultural uniformity. strong social cohesion.	●Based on Taoism and Neo-Confucianism ●Cosmological or Feng-shui determinism· Geomentality of respecting the nature, a oneness representation of the relationship between humanity and environment, as in the spatial configuration of Lungshan Temple in Wanhua or the old inner walled city, Taipei
2. Colonial city 2 1 Colonial small grid 2 2 Square and plaza 2 3 Grand avenues 2.4 Residential streets	The old urban quarters: Hsimenting, Inner walled city,	● Japanese colonial period (1895-1945)	● Small grid geometric shape ● Ceremonial square for military parade, e.g. the grand rectangular plaza in front of the Governor House ● Ceremonial avenues for military parade and public celebration.	● To show the Imperial power over the control of colonial land ● Social and cultural separation between the dominant Japanese and the subordinate Chinese resulted in spatial inequality.	●Political determinism absolute power representation of the colonist. ●The structural centrality was based on the Japanese Imperialism
3. Post-colonial city 3 1 Post-colonial supergrid 3.2 Square and plaza 3.3 Grand boulevards 3 4 Residential streets 3 5 Leftover space (spaces under flyovers and viaducts)	The new urban quarters: Dian, Hsin-yi areas	● Contemporary period (1946 – present) i) Authoritarian state before 1988 ii) Democratic state after 1988	● Perfectly geometric shape with super grid cut across by grand boulevards ● Religious square – worship and sightseeing activities, e.g. Lungshan Temple ● Political square and boulevard – military parade and demonstration activities, e g Presidential Plaza, Ketagelan Avenue ● Memorial and leisure square – social gathering, leisure and demonstration activities, e.g CKK Memorial Hall ● Commercial square – formal and informal economic activities, e g Shin-kang Plaza ● New leftover space – parking and weekend economic activities, e g Sunday flower and Jade market in Kienkuo South Road, or shops underneath the viaduct of Huanho South Road	● Social life is influenced by globalisation Cultural forms and shapes are more universal The formation of department store, super shopping mall and super corporate tower indicate the change of social life in the globalised city. ● Social segregation in different sectors of the city	●Economic and political determinism influenced by global and monetary values. ●Geomentality of reorganizing nature in geometric forms, as in the perfect grid pattern of Hsinyi Special District, Taipei.

Fig.8.1 An overall view of spatial transformation of Taipei

was oriented on a central functional and spiritual space. This spiritual space was the most integrated social element. The whole setting was confined to the lineages or kinship-based groups and responded to the operation of daily life activities of members of the family. In this sense, the worldview of traditional urban space was developed from within. Traditional urban spaces were planless cultural products of many past generations. The spatial configurations were grown slowly with innumerable additions and modifications without regard for consistency, without subordinating them to some common and general aim. The fit between social patterns and spatial configurations was not consciously planned but developed through long experience.

The production of colonial form has different cultural perspective. One of the prominent examples was the Japanese Governor House (the present House of the President) and its grand front-plaza which was as concrete urban form built during the Japanese occupation. The power-space relationship was truly reflected on this spatial form which was built on the Japanese cultural ground. Another reflection was the small grid spatial pattern which delivered tight control on the local communities based on the design of revised *Pao-chia* system[115], i.e., a subdivision of the whole community into small neighbourhood unit which could be effectively overlooked by an assigned leader or association. The system resulted in a change in the inhabitants' social life, which became integrated with the new cultural spatial pattern in the colonial period.

Seemingly, the new urban forms in post-colonial city of Taipei are likewise not developed in a process of autonomous formation, but are formed all at once in terms of explicit goals and interests, new values, and assessment of aggregate needs by external forces such as political intervention or corporate power. For example, in the late 1940s and 1950s, the Nationalist government erased almost all Japanese symbolic and cultural built artefacts and spaces including the removal of any Japanese shrines or the transformation of grand Baroque streets and Japanese gardens. New built forms and patterns were inserted into the colonial context in order to reclaim new cultural indexes referring to Chinese characteristic and symbolic Chinese image, such as the Chiang Kei-Shek Memorial Hall or Sun Yat-sun Memorial Hall. Or in the recent time, the planned unit development (PUD) of Hsin-yi Special District in the new urban centre is another vivid example to deliver a statement of new constructed cultural feature as reflected from its supergrid spatial pattern

which is favoured for super block development of grand-scale shopping mall or skyscraper, such as the most recent built tallest building in the world, Taipei 101 financial centre, which is seen as a metaphor for the whole process of globalization. These spatial pattern and forms are the products enriched in the soil of global culture.

In conclusion, differentiated forms of urban spaces demonstrate significant cultural transformation from traditional notions to a new interpretation of space and built environment. The transformations of urban forms are a result of value conflicts which shape the cultural features from different identities of political groups or regimes. The definitional differences between the old and the new quarters mostly revolve around the degree of community cohesion or collective life, and the extent to which the spatial patterns reflect an ideology of distinctive cultural identity relative to the socio-political structure of the local communities.

Fourth, there is a strong correlation between the movement of people and certain occupational uses such as the mixed-use commercial and institutional spaces,[116] which fulfil the desired lines of pedestrian paths going to specific places in the particular urban area in both of the new and old parts of the city.[117] From the perspective of historical transformation, the analysis indicates that the mixed-use urban form is a consistent spatial element as the most integrated space in the city and this form represents a dominant genotype in both urban centres, though the relation of form and function is varied according to the change of social structure and lifestyle over time. The micro study of movement patterns of two urban areas in the present situation reveals that the typology of mixed-use urban form posits itself as the major centre of city life for drawing the highest intensity of pedestrian activities, and shows how some old mixed-type urban forms are successfully re-adapted into the present condition of spatial milieu by transforming their functionality in connection with present daily activities. The revelation has a conclusive link with Hillier's argument that spatial configuration influences the way people move

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[116] The correlation is analysed by Space Syntax theory which is a method for describing spatial configuration and relating it to social patterns of activities, movement, behaviour and social meaning. The observation of behaviour and movement is important, as Penn (2004) argues, "to find out something about how those societies reproduce, transact, and generate new social forms, and about how spatial environments relate to that".

[117] The analysis is clear that those specific places are mixed-use urban forms represented by the integrated nodes which carry the highest rate of movement and tend to be crossed by movement more than any other elements in the whole spatial system. (See also Hillier, 1999)

through spaces, independent of other variables. Patterns of movement go on to affect many social phenomena which are the incubator of change. (See Hillier, 1984, 1996, 2004).

The implications of the strong correlation between the movement and the mixed-use urban forms in Taipei context highlight two significant aspects. Firstly, the change of social life of different groups/genders across the periods suggests that the use of urban space has been altered. As a result, present-day users give different perspectives on the representation and recognition of everyday spaces of the city. For instance, the emergence of economic mixed-use space of street and temple square in traditional society in combination with a social order has emphasized the opportunities use of space within an open and accessible place-bound 'market'. This spatial type was culturally and economically vital in well-functioning central urban context, as which attracted full of the bustle of people movement, buying and selling goods and services and interacting with others, to make way for a certain sort of public life.

Simply speaking, this mixed-use space was a combined economic and religious centre. However, this traditional urban space was not neutral being occupied mostly by men in keeping with the male dominant society of the past, formed on the basis of male supremacy in Confucian doctrine. Under this condition, the active participation of females in the streets and public spaces activities were suppressed, but the changes in social structure, lifestyle and the upgrade of female status in present-day society offer resistance to this dominance. Spaces like Lungshan are no longer a domain only for dominant male user being transformed from an economic-religious centre into a tourist spot, a spatial representation for all. Evidence of the newly transformed mixed-use commercial and institutional spaces includes Hanchung Street as a rendezvous for youngsters and retired old men, and similarly Springfield Cinema Plaza for movie goers and Landmark Square for social gathering and meeting friends. Likewise Tien-hou temple for worshipers in the old urban centre, the triangular Dinghou square and Lungmun square for social gathering and informal economic activities of a parade of foreigners and local residents, and Sogo square for kids and mothers in the new urban centre. All these attract diverse ages, genders and ethnic groups to mix comfortably. They function not only as civic and neighbourhood amenity which provides people with great accessibility to sit, people-watch or meet friends, but also, as the destination for a wide variety of people, residents and visitors, they create

an anchor for economic activity. In contrast with the past, today women have become the dominant group enjoying and participating in the public events taking place in those mixed-use urban public spaces.

Secondly, the smooth outflow of the public can be seen as a significant factor in a successful public place. The movement pattern is related to the street system which organizes the relationship of particular buildings to each other and to the particular topographic situation of the city. Activities and movement comprise a substantial part of the dynamics of an urban system and its social life. It is a systematic culture-bound phenomenon related to the intrinsic property of spatial configuration. For example, the small scale block structure and the locally integrated grid structure minimise mean trip length within the grid of the old quarter. This structure as a whole creates locations with movement potential. Locations of integrated spaces are most likely mixed-use urban forms which are the attractors or generators of movement as they carry greater pedestrian flows than more segregated ones, according to the study of the relationship between configurational measures of those locations and flows. It is evident that a successful place provides numerous accessible and multi-functional spaces, which one might refer to as Focault's (1993) 'heterotopia', for public encounters and allows diverse spectacle for people experiences, as well as with respect to their arrangement. Two aspects are worth highlighting:

1) As the location of mixed use activities not constrained by the grid configuration, they can enhance the attractiveness of urban areas and can be regarded as a strategic variable in urban planning and management.

2) The formation of more mixed-use milieu, as a local cultural manifestation, can help to reintegrate the accessibility of a city and stimulate the interaction between different groups of people.

8.3 Thinking the critical future of "place-making"

> A culture is not a symbolic pattern, preserved like a butterfly in amber. Its place is not in a museum but in the practical activities of daily life, where it evolves under the stress of competing goals and other competing cultures. Cultures do not exist as simply static "differences" to be celebrated but compete with one another as better and worse ways of getting things done --- better and worse, not from the standpoint of some observer, but from the standpoint of the peoples themselves, as they cope and aspire amid the gritty realities of life.
>
> (quoted from Steven Pinker, 2002:67)

Views on place-making are tributaries, each contributing its own perspective on the relative significance of physical features and the spirit of community, namely, social life and communal values. Some scholars argue that factors such as external appearance, access, layout, context of surrounding areas, physical and environmental impact etc. are more important for the understanding of the image and identity of a city (See Crang, 2000; Carmona et al., 2003). In contrast, the research illustrates that the construction and transformation of these physical features are motivated by an 'underlying structure' which is the force to pull the spatial character of the city together. The city is built from moment to moment. The gradual growth process ensures the city that can build up its own distinctive character and identity through a continuous living system, i.e., a handing down of customs and forms from generation to generation. In other words, place-making is a continuous process of spatial construction and deconstruction that is necessary to establish cultural recognition and representation. Pinker (2002) vividly reflects that culture is not like a pond of stagnant water. It is a dynamic formation with interaction on people's life which matters the spirit of space and brings back the life of a place. In this view, place-making is not just about physical transformation, but is constructed out of particular cultural existences and social relations which are the forces for the poetic formulation of a successful place. In particular, the more global and uniform our civilization in this cyberspace era, the more people want to anchor themselves. Place-making should take more concern of the local culture of social life rather than just thinking of physical features.

In order to learn about the essence of place-making, we need to understand what the nature of the continuous process is because the process of transformation often maintains itself in a continuous in-flow and out-flow, building up and breaking down of components in the spatial environment. As demonstrated in this research, such

understanding can be grasped through a reading of spatial transformation which is critically important for its structural analysis of the spatial configurations to which it applies and the structural change that it effects on these spatial configurations. Spatial configurations exist in relative totalities and systems, in which the parts are conditioned by the whole. Spatial meaning always consists of relationships between the whole and the parts, and between the parts in a system.

According to Hegel the limits of the mind are the limits of the world (Hegel in Mittelstraß, 2003: 34). In order to avoid this constraint, critical thought is necessary to breakthrough this limitation. The research offers a liberation of thinking on place-making by providing alternative for examining the critical future of globalised urban space. Four categories should be considered for place-making with reference to the previous findings of 'underlying aspects'.

Firstly, it is important to look into the cultural genotype of localized space, which offers us a direct insight into the sociological structure and the core of spatial structure. It allows us to capture the way urban space is generated in response to the internal social mechanism of the daily life pattern.

Secondly, looking into the ordering of spatial configuration and the rules of urban growth would help us to objectively regulate the sustainable growth of the city in response to new spatial and social needs. Besides, it also avoids an excessive reliance on pastiche, preservation or unrealistic utopia. A middle way is set to find a balance between developing a city with a global connection that carries a cosmopolitan identity, simultaneously articulates with local heritage that attains local identities and characters and provides richness with diversity and choices. Recognition of intrinsic spatial orders and rules will certainly help to shape cities if we cluster developments and organize the ways in which the cities potentially grow.

Thirdly, understanding the dimensions of an ideological system and social properties beyond the spatial forms and patterns is necessary for place-making because these dimensions respond to both functional and symbolic needs through the coordination of forms, needs and spiritual force. Such understanding will help to reveal belief and values for the formation of urban spatial forms and patterns. Clearly, belief and values do not just

float around. They are closely tied to distinctive patterns of social relationships and to the distinctive way of behaving that those beliefs and values justify.

Fourth, mixed-use urban form is the most magnetic attraction being as the anchor of place. It will have a revitalizing effect on the city and welds it together. Acquaintance with such urban form is worthwhile for understanding the specific condition of place-making in Taiwan. For example, the transformed Lung-shan Temple is not simply a classic religious place for worship, but also a place of local culture and informal economic activities, of history and modernity, of interaction between visitors and local residents.

As a result, a desirable liveable place should contain at least six dimensions, which are evolved from these four underlying aspects. They include:

1) A single representation of the relationship between humanity and environment;
2) A historical and cultural continuity of urban forms;
3) A mixed-use activity of urban form;
4) Social integration and balance;
5) A clear spatial centrality;
6) Spatial accessibility and appreciation for multiple groups.

Thus, a successful urban place maintains the good life which means that a space is serviceable, accessible, and memorable, thus combining historical and cultural values with aesthetic and recreational values. The essence of urban space lies not in the formal characteristics but in the overlapping of and exchange between different social realms with all these values.

8.4 Concluding Reflections for Future Planning and Urban Design

This research offers a bird's eye view on the whole picture of the city's spatial issues and its transformation. It reveals how urban space is transformed through a critical examination of historical and socio-cultural spatial forms and patterns. It offers a way to address the issues of place-making which are of concern to everyone (especially design professionals and policy makers) and lets us know beyond what point the city is threatened in its form and functioning, in its definitions and identity. Through this research we see an

actual new space that transcends the physical. A successful design of urban space is not just a matter of drawing beautiful lines on the blueprint papers, fancied perspectives and making beautiful models. The findings suggest that a successful place needs to stress the creation of visual order, physical integrity, social balance, and ready accessibility to needed everyday life socio-cultural facilities. All the aspects of spatial arrangements, location, centrality, and territoriality contributing to the creation of a sense of community and place are evolved in response to the intrinsic 'underlying structure' of space which shapes the spatial contexts in which life takes place and also helps to maintain values to live by. As Lefebvre (1991) asserts, this deep structure is constituted by 'everyday life'. The understanding of the deep structure of spatial configuration is significant for our future spatial planning and to establish strategies for urban design. This understanding would lead us to divert from the accustomed view of spatial knowledge to another route. As Penn (2001) points out, the accustomed or normative view is problematic to our thinking.

> The problem is that people use space intuitively and subconsciously, and so have a very poorly developed lexicon to deal with socio-spatial issues. Space is like speech. We know that there are rules of grammar, and we use these everyday to make ourselves understood and to understand others, however we do that almost entirely subconsciously. The same goes for using space, it is 'lawful', and we use that lawfulness without thinking about it, so we have never named its parts.

The problem is clear that people normally conceive the spatial knowledge of the existing built environment as norms and take it its use for granted. They never understand the logic behind the formation of those urban spaces. The issue would be more serious if design professionals and policy makers are lack of any reflection on the knowledge of the logic of urban space. Our built environment would never come into shape as a whole integrity but might disintegrate into pieces without any socio-spatial solidity. For the sake of prospects of spatial planning and urban design, the awareness of the knowledge of the deep structure is necessary to allow us to understand the 'conditions' and 'qualities' of urban space. The study illustrates that the deep structure can be expressed from syntactic values which become manifest in an actual environment through a set of transformational rules and operations.

The 'conditions' here are about the relationship between the parts and the whole of the spatial configuration which can be identified from two sets of formal aspects. The first

is between permeability and depth value and the second is between spatial integration and cultural genotype. These conditions do not exist without each other. They are interdependent and relate to a belief system and social properties. The 'qualities' are regarded as three-dimensional and physical and as having naturally evolved along with historical and cultural values. Thus the qualities can be interpreted with syntactic meaning, which is spatial and the relationships between elements. It is because of these relationships, that the deep structure can truly reflect the cultural values and inner spirit of our society which together are the force and logic behind the formation of distinctive socio-cultural space. The revelation echoes Bachelard's (1969:205) central idea that 'the depth of inner space is an adherence to an inner substance'. The inner substance is not only to explain the formation of surface structure behaviour, but also to reflect the conditions and create the qualities of socio-cultural space.

In 21st century, we cannot ignore the trend of globalisation. But the lack of an objective understanding of the past and the rush for the modernization of the city without a critical epistemology of spatial transformation would certainly endanger our local spatial character and identity in Taiwan. The failure of present modern urban plan in Taipei is an obvious example which reminds us that if we do not have the consciousness of the relationships between local and global, tradition and modern, part and whole of the city and the community, a genuine place-making will never be accomplished in the future.

8.5 A Critical Integrated approach to the study of spatial transformation

The proposed critical integrated approach is a concluding reflection of the study. It is an attempt to construct a platform of objective knowledge which enables reasonable understanding of the dynamic process of place-making. It will provide not only 'very artistic' decision, but also the poetically stimulating choice and juxtaposition of functions that decide about the deeper quality of a place. The integrated approach is accomplished by the syntax analysis which strengthens the understanding of spatial configuration by logical description and by relating it to social patterns of activities, movement and social meaning. It enables us to see activities in spatially discontinuous locations simultaneously. The conceptual framework develops a way of using new sensibilities to explore a deeper understanding of urban space, and uncovers new sources of imagination for place-making.

This framework provides an alternative base for understanding of how to view spatial change and calls for a re-consideration of spatial construct in future urban renewal and development in terms of identity and character formation. The conceptual diagram in Fig.8.2 illustrates a structural relationship for understanding place-making. It indicates that a critical reading of spatial transformation of a place over time is important for us to learn the knowledge of 'why' and 'how' urban space is transformed. Through the epistemology of these two intelligible realms, the conceptual framework will uncover the intrinsic underlying aspects of spatial configuration, as shown in previous section. The study illustrates that the critical integrated approach is well equipped to explore the relationship between dynamic state of people's daily life and cultural form of urban space. Their interaction enables us to understand the logic behind the reasoning of the formation of spatial patterns through which we can recall, and describe the meaning, and function of individual urban spaces in relating to daily life.

The approach also provides a micro-perspective of the attitude and responses of different genders and age groups to the use of current urban spaces according to their values and preference. This perspective is important for spatial design and should be taken into account. In short, an understanding all these aspects, as illustrated in the conceptual diagram, is essential for place-making and will justify the meanings and functions of individual urban spaces and their relationships within the whole. The validity of the research findings can only be evaluated by practical trials.

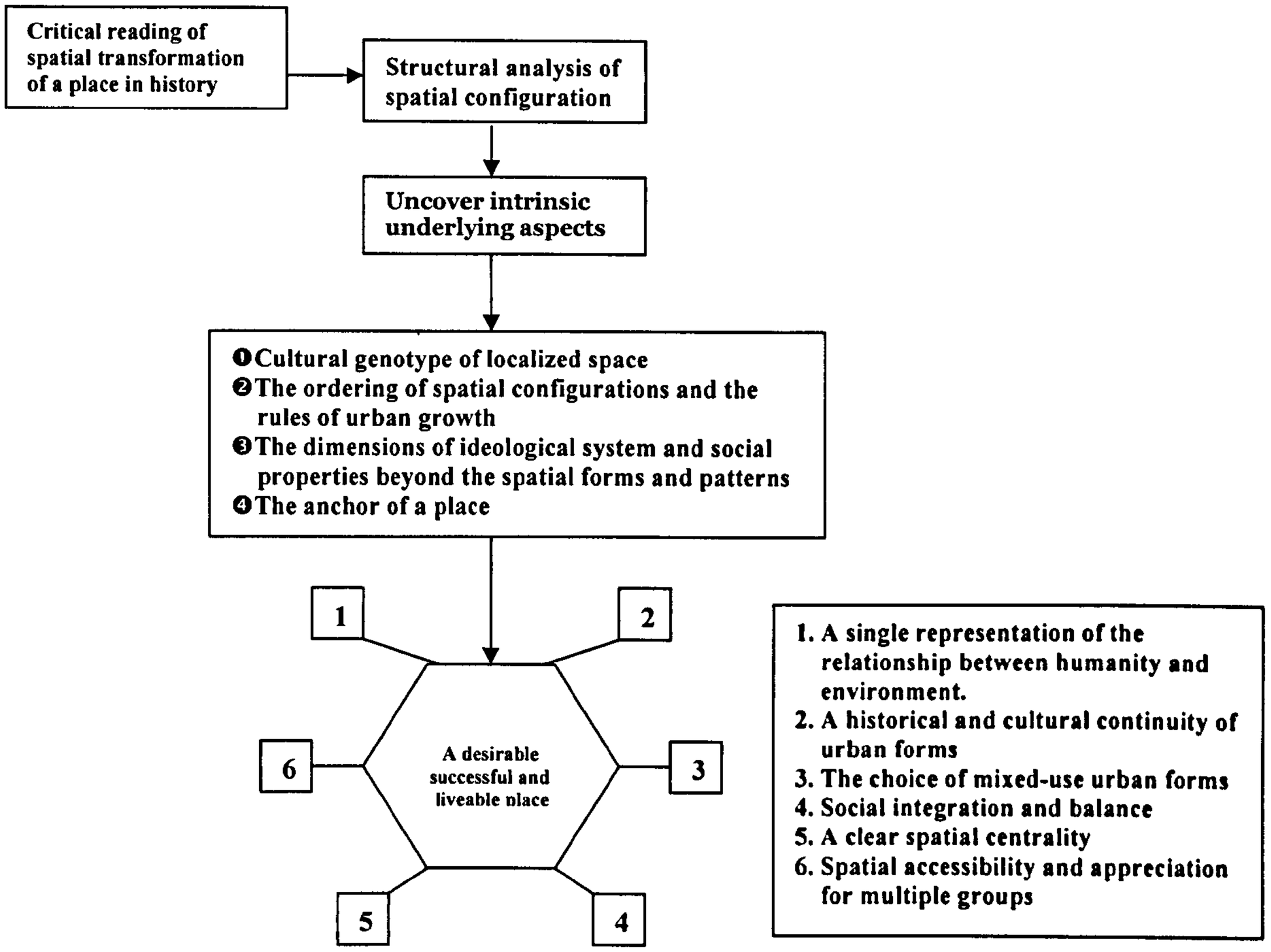

Fig.8.2 Conceptual diagram for understanding of place-making

8.6 Suggestions for Further Research

The findings in this study contribute significance knowledge for understanding of place-making. A number of lines for further research are also suggested from the findings:

1. A further evaluation of cultural genotypes

With the uncovering of underlying structures and spatial genotypes, a further study is suggested to construct a comparative measure of different cultural genotypes in terms of their internal spatial organisations and the spatial relationships between these individual cultural genotypes and the whole. The comparative measure will identify their spatial similarity and difference, which are important for an understanding of their values to the quality and identity construct of urban space. A detailed understanding of cultural genotypes will help to acquire a stronger spatial and cultural character for the city in

response to the reality of present condition. Based on this exploration, it will offer a deeper understanding of the emergent structure of the physical city as well as the constructive functional logic and functional impacts of these cultural genotypes to the spatial environment. Such understanding will certainly help to establish sensible and logical urban design guidelines for future implementation of urban design.

2. A study of the relationships between female role and post-colonial urban forms

Given the evidence of increasing participation of females in current urban public spaces, it is necessary to consider female role at the core of spatial design. The study would set the tone, redefine the spatial relationships or modify them in accordance with the daily life experience of female gender in post-colonial urban forms such as shopping malls or health and recreational facilities. Understanding of such relationships will prevent the disintegration of the spatial environment and help to acquire more sensible place-making, as we take the lesson of real life in the communities back into the future.

8.7 Concluding Remarks

In this cyberspace era, we can no longer use our common knowledge to read the city, as the space of being becomes more complex and unpredictable, such as the difference between territorial and virtual communities in reflection of real space and cyberspace, or the question of spatial control and monopolisation caused by globalisation which casts a fearful dimension over the future. The meaning of being and the ideality of meaning are confused to existing spatial environment. So we need to have a précised and deeper knowledge of the relationship between social behaviour and spatial configuration, both theoretical and practical, to make a clear and trustful decision-making system for urban design and planning. In so doing, it is necessary to reveal and understand the inner nature and deeper structure beyond the external aspects of urban spaces. Otherwise, we shall end up into a labyrinth which will certainly entrap us in infinite turns and detours, wandering aimlessly and becoming lost in space and time.

The integrated approach in this research enables a structuralized analysis of spatial transformation over time in which reality is discussed and options evaluated. It provides people with ability to acquire understanding of spatial structure and context which are rooted in the knowledge of history and the connectedness real life habitat. Through the

study of the spatial milieu in Taipei, as providing specific experience different from those dominant Western cities, the revelation is clear that 'the seeds of the future may be found by carefully analyzing the characteristics of past building efforts. But this involves an editorial process, not simply imitation' (Gary Hack, 1995:2). Taking Rykwert (2000:244-5) as a concluding remark:

> We can no longer afford to read the city as an amorphous stringing out along freeways into conurbations as futurologists once did. The city can be understood only in the context of its landscape, as part of its inalienable region, but also as an entity with one or more designated centres, with marked edges – if only on the map. If there is one thing that the computer has added to the designers' resources, it is the facility to see the city not as a two-dimensional figure-ground image but as a three-dimensional construct, which is, after all, how it is experienced by its inhabitants.

I think this is increasingly true. Place-making should blend past and present, real and virtual, public and private in the production of urban space in this present complex society, which stems from attachment to the spatial landscape of man-made features and nature, to creates cultural roots for different groups of inhabitants who share experiences and common goals. Continuity and identity will only be cultivated with awareness of the link between the historical, cultural and social life of the city and its spatial forms and patterns.

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Gate Number	Location	M1(8 a.m. ~10 a.m.)	M2(10a.m.~ 12noon)	M3(12 noon ~14 p.m.)	M4(14p.m.~ 16p.m.)	M5(16p.m.~ 18p.m.)	M6 (Total)
1	Chunghua Rd	3	11	11	13	17	55
2	Landmark square	5	17	23	39	24	108
3	Tien-hou Temple	11	19	24	27	20	101
4	Hanchung street (MacDonald)	12	31	44	40	32	159
5	Springfield Cinema Plaza on Hanchung Street	7	19	45	36	36	143
6	Hsinling South Road Next to alley (facing First Comm. Bank)	7	9	14	41	15	86
7	Hsiling S. Rd. (facing I-lok-yuan Hotel)	8	5	11	10	7	41
8	Hanchung Street / Kaifung Street Section 2	4	2	8	8	10	32
9	Chunghua Road Section 1 (Primary school)	6	3	6	8	6	29
10	Chunghsiao Section2 (next to Inland Revenue building)	8	4	7	11	4	34
11	Huanho S. Rd. Section 1 (Lokyang Parking garage)	7	3	3	10	3	26
12	Chunghing Primary School (Kunming Street Alley 28)	9	7	8	15	9	48
13	Hanhou Street Section2 Alley 53	10	11	30	15	18	84
14	Lai-lai Department Store	11	7	27	36	23	104
15	On Omei street & Kunming street (facing Lokyang parking garage)	5	16	19	28	22	90
16	On Kunming Street/ Omei Street (Co-Operative Bank)	3	9	27	20	18	77
17	Chengtao Road Alley 105 (facing Hsimen Primary School)	11	9	18	7	16	61
18	Kangting Road	2	3	9	9	8	31
19	Huanho S. Rd. Section1 No.41 and Hanhou St.	1	3	7	5	6	22

Note: The duration of observation for each gate was 2.5 minutes per period. The five periods from 8a.m.~18p.m. was 12.5 minutes.

Table 5A-1: Observation of moving men at 19 gates of Hsimen area

Gate Numbe	Location	W1(8 a.m. ~10 a.m.)	W2(10a.m.~ 12noon)	W3(12 noon ~14 p.m.)	W4(14p.m. 16p.m.)	W5(16p.m ~18p.m.)	W6 (Total)
1	Chunghua Rd	5	11	18	20	22	76
2	Landmark square	22	13	29	26	21	111
3	Tien-hou Temple	16	17	31	15	19	98
4	Hanchung street (MacDonald)	15	23	30	22	33	123
5	Springfield Cinema Plaza on Hanchung Street	5	14	28	29	42	118
6	Hsinling South Road Next to alley (facing First Comm. Bank)	3	13	11	17	20	64
7	Hsiling S. Rd. (facing I-lok-yuan Hotel)	4	6	6	9	10	35
8	Hanchung Street / Kaifung Street Section 2	7	1	5	7	2	22
9	Chunghua Road Section 1 (Primary school)	29	6	14	4	6	59
10	Chunghsiao Section2 (next to Inland Revenue building)	5	4	7	4	1	21
11	Huanho S. Rd. Section 1 (Lokyang Parking garage)	1	0	2	3	0	6
12	Chunghing Primary School (Kunming Street Alley 28)	8	5	8	4	6	31
13	Hanhou Street Section2 Alley 53	4	7	13	6	3	33
14	Lai-lai Department Store	6	11	27	40	18	102
15	On Omei street & Kunming street (facing Lokyang parking garage)	5	9	19	19	30	82
16	On Kunming Street/ Omei Street (Co-Operative Bank)	6	11	17	23	20	77
17	Chengtao Road Alley 105 (facing Hsimen Primary School)	10	11	21	6	16	64
18	Kangting Road	4	4	4	4	6	22
19	Huanho S. Rd. Section1 No.41 and Hanhou St.	1	1	4	0	2	8

Note: The duration of observation for each gate was 2.5 minutes per period. The five periods from 8a.m.~18p.m. was 12.5 minutes.

Table 5A-2: Observation of moving women at 19 gates of Hsimen area

Gate Numbe	Location	T1(8 a.m. ~10 a.m.)	T2(10a.m.~ 12noon)	T3(12 noon ~14 p.m.)	T4(14p.m.~ 16p.m.)	T5(16p.m.~ 18p.m.)	T6 (Total)
1	Chunghua Rd	4	12	0	18	19	53
2	Landmark square	5	5	2	25	22	59
3	Tien-hou Temple	4	4	0	0	10	18
4	Hanchung street (MacDonald)	3	8	13	43	42	109
5	Springfield Cinema Plaza on Hanchung Street	2	4	9	44	31	90
6	Hsinling South Road Next to alley (facing First Comm. Bank)	0	7	7	36	30	80
7	Hsiling S. Rd. (facing I-lok-yuan Hotel)	3	2	4	1	4	14
8	Hanchung Street / Kaifung Street Section 2	0	0	0	2	7	9
9	Chunghua Road Section 1 (Primary school)	0	1	1	3	1	6
10	Chunghsiao Section2 (next to Inland Revenue building)	0	0	0	0	1	1
11	Huanho S. Rd. Section 1 (Lokyang Parking garage)	1	0	0	0	0	1
12	Chunghing Primary School (Kunming Street Alley 28)	0	0	3	4	3	10
13	Hanhou Street Section2 Alley 53	0	0	6	3	14	23
14	Lai-lai Department Store	1	4	21	21	21	68
15	On Omei street & Kunming street (facing Lokyang parking garage)	5	0	24	17	22	68
16	On Kunming Street/ Omei Street (Co-Operative Bank)	3	0	5	8	14	30
17	Chengtao Road Alley 105 (facing Hsimen Primary School)	2	2	3	9	10	26
18	Kangting Road	0	2	0	0	1	3
19	Huanho S. Rd. Section1 No.41 and Hanhou St.	0	0	0	0	0	0

Note: The duration of observation for each gate was 2.5 minutes per period. The five periods from 8a.m.~18p.m. was 12.5 minutes.

Table 5A-3: Observation of moving teenagers at 19 gates of Hsimen area

Gate Numbe	Location	C1(8 a.m. ~10 a.m.)	C2(10a.m.~ 12noon)	C3(12 noon ~14 p.m.)	C4(14p.m.~ 16p.m.)	C5(16p.m.~ 18p.m.)	C6 (Total)
1	Chunghua Rd	0	0	0	0	5	5
2	Landmark square	0	1	0	4	3	8
3	Tien-hou Temple	0	0	1	1	0	2
4	Hanchung street (MacDonald)	0	0	2	0	10	12
5	Springfield Cinema Plaza on Hanchung Street	0	0	2	1	1	4
6	Hsinling South Road Next to alley (facing First Comm. Bank)	0	0	1	0	4	5
7	Hsiling S. Rd. (facing I-lok-yuan Hotel)	0	0	0	0	0	0
8	Hanchung Street / Kaifung Street Section 2	0	0	2	1	0	3
9	Chunghua Road Section 1 (Primary school)	0	0	0	0	2	2
10	Chunghsiao Section2 (next to Inland Revenue building)	0	0	0	3	0	3
11	Huanho S. Rd. Section 1 (Lokyang Parking garage)	0	0	0	0	1	1
12	Chunghing Primary School (Kunming Street Alley 28)	0	0	0	2	0	2
13	Hanhou Street Section2 Alley 53	1	0	1	0	1	3
14	Lai-lai Department Store	0	1	0	3	0	4
15	On Omei street & Kunming street (facing Lokyang parking garage)	0	0	1	0	1	2
16	On Kunming Street/ Omei Street (Co-Operative Bank)	0	1	0	0	7	8
17	Chengtao Road Alley 105 (facing Hsimen Primary School)	0	0	1	0	2	3
18	Kangting Road	0	0	0	0	6	6
19	Huanho S. Rd. Section1 No.41 and Hanhou St.	0	0	1	0	0	1

Note: The duration of observation for each gate was 2.5 minutes per period. The five periods from 8a.m.~18p.m. was 12.5 minutes.

Table 5A-4: Observation of moving children at 19 gates of Hsimen area

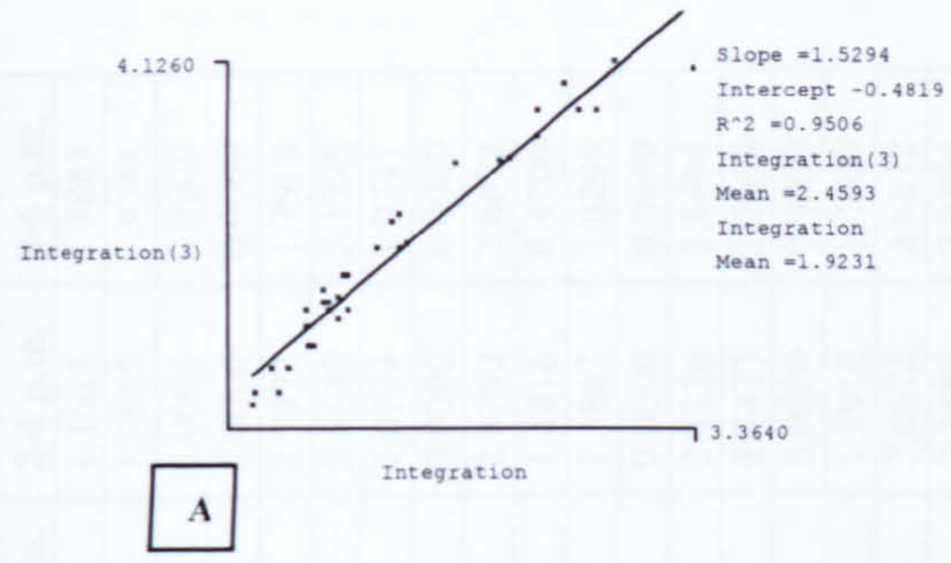
Gate No.	Spatial types	Spatial character and functional uses	Spatial width (H) = meter	Building height (V)= meter	Ratio of H/V	Order of Total moving objects (ranked)	Spatial activities		
							Service: recreation entertainment, food, and others	Daily retail	Non-daily retail
1	Boulevard	informal, linear, openness with 18m wide pedestrian lanes on both sides	38.5	35	1.1	9	KTV and restaurants, office	snack shops,	Clothing stores, shoes and leather shops, boutique,
2	Circular square	Formal, circular, openness	30	28	1.07	3	Fast food chain restaurants,	24 hour-Convenience shop	Department store, retail shops, boutique, perfume
3	Main Street	Completeness is enhanced by the arcades at the ground floor levels; the facades with the harmony of similar materials, forms and exquisite detail specify colonial image	16.36	10.5	1.56	7	CD & DVD, Worship: Tienhou Temple	small snack shops, convenience shops	clothing, leather, shoes, Jewelry,
4	Rectangular plaza	Rectangular, arcades at the ground floor level, small scale enclosed spatial units, landscaping with resting area. Youth assembly hall at No.45 (223m^2)	12.73	28	0.45	1	Cinemas, sauna, bowling, fast food chain restaurant (MacDonalds, KFC), Japanese restaurants	small snack shop and street vendors, shoes	Clothing/fashion stores, records, KTV,
5	Rectangular plaza	Informal, rectangular,	12.73	14	0.91	2	Food court, fitness centre, KTV, coffee shops (Starbuck etc), cinemas,	convenience store	Boutique, fashion, perfume
6	Secondary street	Arcades at the ground level, tight pedestrian lanes, completeness with similar materials, forms, and exquisite detailing	16.36	10.5	1.56	6	beauty salon, KTV, cinema (China)	food store, grocery store	Commercial complex,
7	Secondary street	Incompleteness	16.36	14	1.17	14	Hotel, motorcycles parking, clinic,	newspaper kiosks, street vendors,	
8	Secondary street	Lack of continuity, narrow pedestrian walkway. Residential area	12.73	7	1.82	15	Primary school, office		Flower shop
9	Boulevard	Linear, Openness	38.5	14	2.75	12	Primary school, office		
10	Primary street/ parking space	Discontinuity, no harmony between the buildings. Office and parking area under flyover	23	14	1.64	17	Small office, mechanical shop, storage, motorbike maintenance shop, parking		
11	Freeway	Lack of continuity, incompleteness	25	19.25	1.30	18	Parking garage, car mechanics sale shops		
12	Secondary street	Lack of continuity, incompleteness	12.73	10.5	1.21	13	Primary school, parking garage, snack shop		
13	Secondary street	Lack of continuity, incompleteness, construction site at corner	16.36	21	0.77	10	small restaurant, KTV		Commercial complex
14	Rectangular plaza	Linear, landscaping with seating area	12.73	35	0.36	4	Street performers portrait drawing etc	Corner convenient shop	Lai-lai department store, shoes, perfume boutique fashion
15	Secondary street	Continuity with similar pattern of shop window, building setback at ground level	12.73	35	0.36	5	KTV, employment centre, parking garage		Commercial complex (Elite), book store, boutique
16	Secondary street	Arcades at the ground level	12.73	35	0.36	8	Bank, commercial complex,	Grocery store	shoes, clothing, mobile phone
17	Secondary street	Lack of continuity. Residential area	16.36	17.5	0.93	11	Primary school, small hotel, restaurant,		
18	Secondary street	Openness, lack of continuity. Residential	16.36	14	1.17	16	Local park, office		
19	Freeway	Lack of continuity, incompleteness. Residential	25	17.5	1.43	19	small restaurants, kitchen utensil manufacturer		
----	Mean	----------	19.33	20.00	1.10				

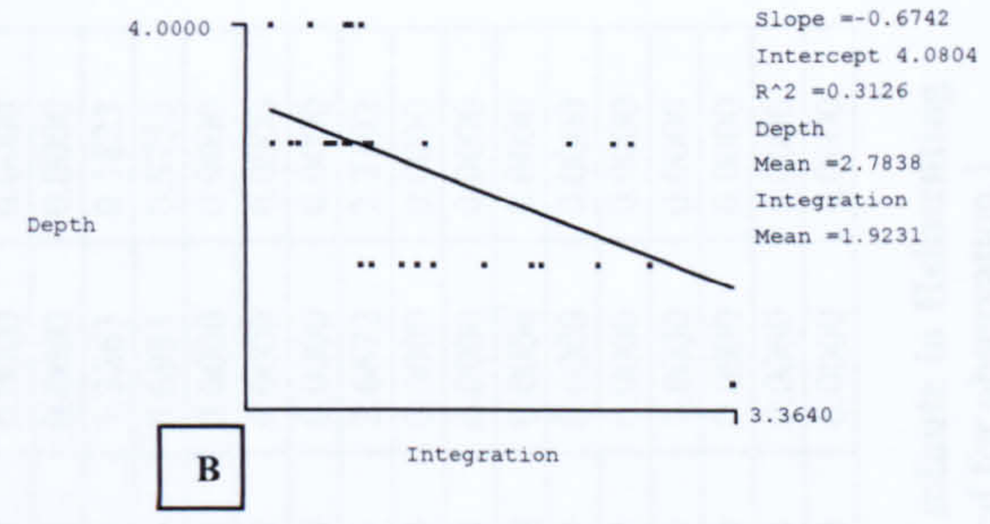
Table 5A-5: Spatial types, characters, functional uses and activities with dimensions for all observed gates

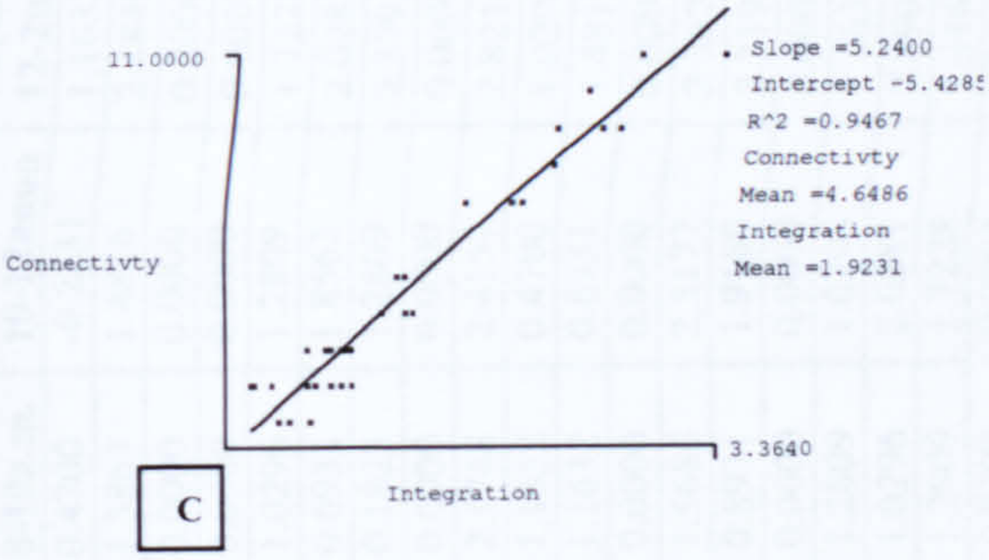
Variables	Time	Men (R^2)	Women (R^2)	Teens (R^2)	children (R^2)	Means (R^2)
Integration Mean integration = 1.9161	All day	0.1744 (+)	0.1179 (-)	0.0132 (-)	0 2508 (+)	0.1391
	8-10AM	0.0925 (+)	0.1099 (+)	0.0849 (+)	0.0490 (-)	0.0841
	10-12 noon	0 1364 (+)	0.0723 (+)	0.0089 (-)	0.0174 (-)	0 0588
	12-14 PM	0.2001 (+)	0.1462 (+)	0.0242 (-)	0.0795 (-)	0 1125
	14-16 PM	0.1834 (+)	0.0831 (-)	0.0047 (-)	0.0732 (-)	0.0861
	16-18 PM	0.2129 (+)	0.0827 (-)	0.0382 (-)	0.0328 (-)	0.0917
Connectivity Mean = 4.6316	All day	0.2658 (+)	0.1941 (-/+)	0.0612 (-)	0.2630 (+)	0.1960
	8-10AM	0.1284 (+)	0.1518 (+)	0.1369 (+)	0.0785 (-)	0.1239
	10-12 noon	0.2270 (+)	0.1333 (+)	0.0433 (-)	0.0080 (-)	0.1029
	12-14 PM	0.2994 (+)	0.2345 (+)	0.0629 (-)	0.1548 (-)	0.1879
	14-16 PM	0.2599 (+)	0.1525 (+)	0.0389 (-)	0.0669 (-)	0.1296
	16-18 PM	0.3170 (+)	0.1499 (-)	0.1110 (-)	0.0271 (-)	0.1513
Ln Observation means per min	All day	0.7577 (+)	0.6114 (+)	0.2346 (-)	-0.5459 (-)	0.2645
	8-10AM	0.5457 (+)	0.4070 (+)	0.0505 (-)	-0.0241 (-)	0 2448
	10-12 noon	0.5842 (+)	0.4571 (+)	0.1755 (-)	-0.0723 (-)	0.2861
	12-14 PM	0.8735 (+)	0.7272 (+)	0.2731 (-)	-0.2105 (-)	0.4158
	14-16 PM	0.9548 (+)	0.6800 (+)	0.5152 (-)	-0.0745 (-)	0.5189
	16-18 PM	0.8168 (+)	0.6178 (+)	0.5927 (+)	-0.0079 (-)	0.5049

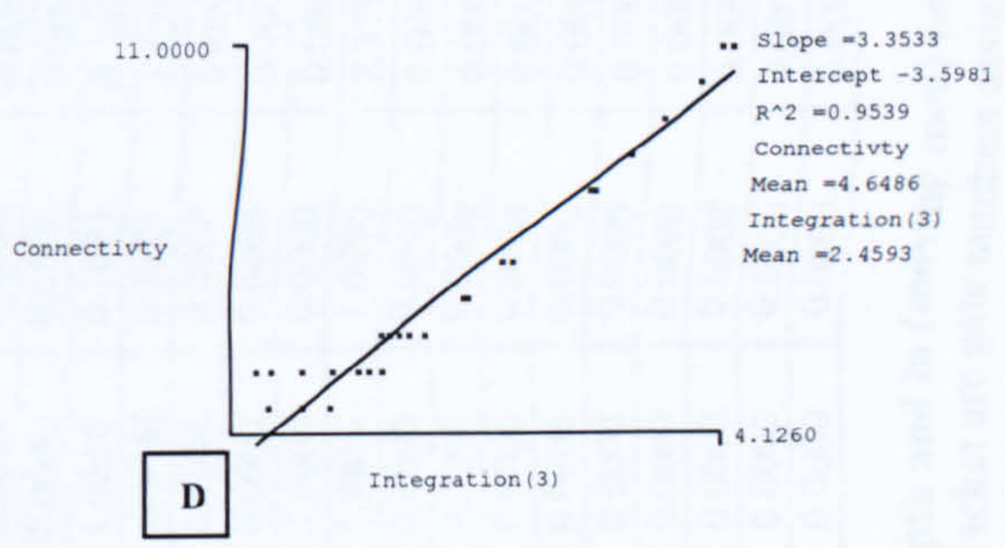
Note: +/- represents the values against the mean values

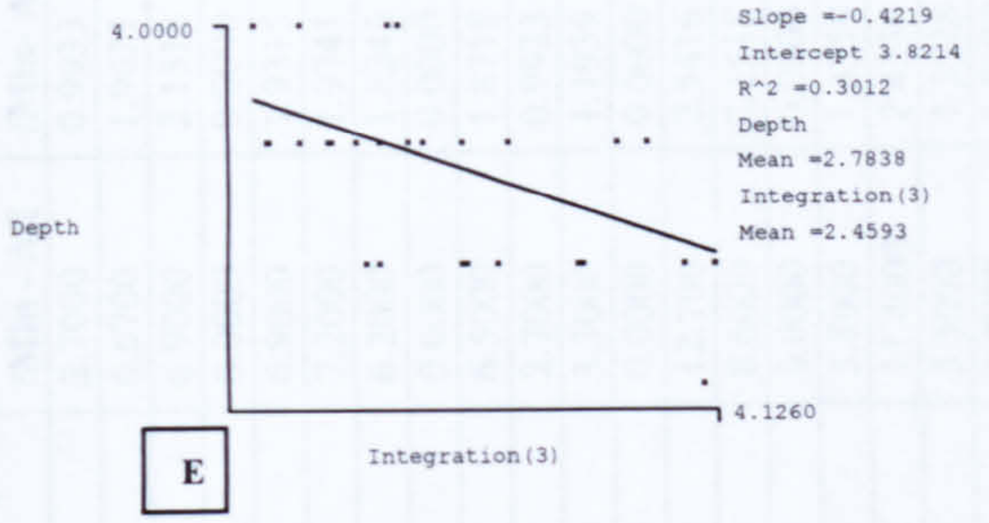
Table 5A-6: Characteristic measures of correlation between different user groups and global integration, depth, connectivity with the observational means per min for the selected areas











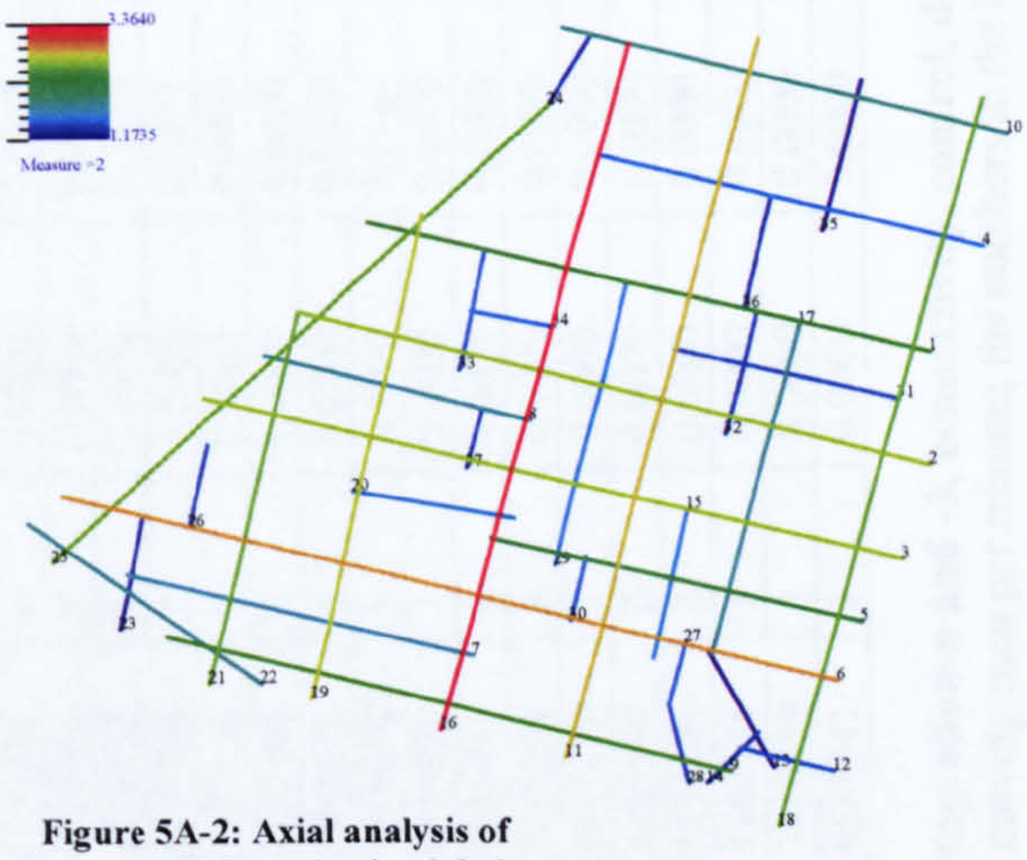


Figure 5A-1: Scattergrams (A - E) of the correlation between syntactic properties of Hsimenting

Figure 5A-2: Axial analysis of Hsimenting in global context

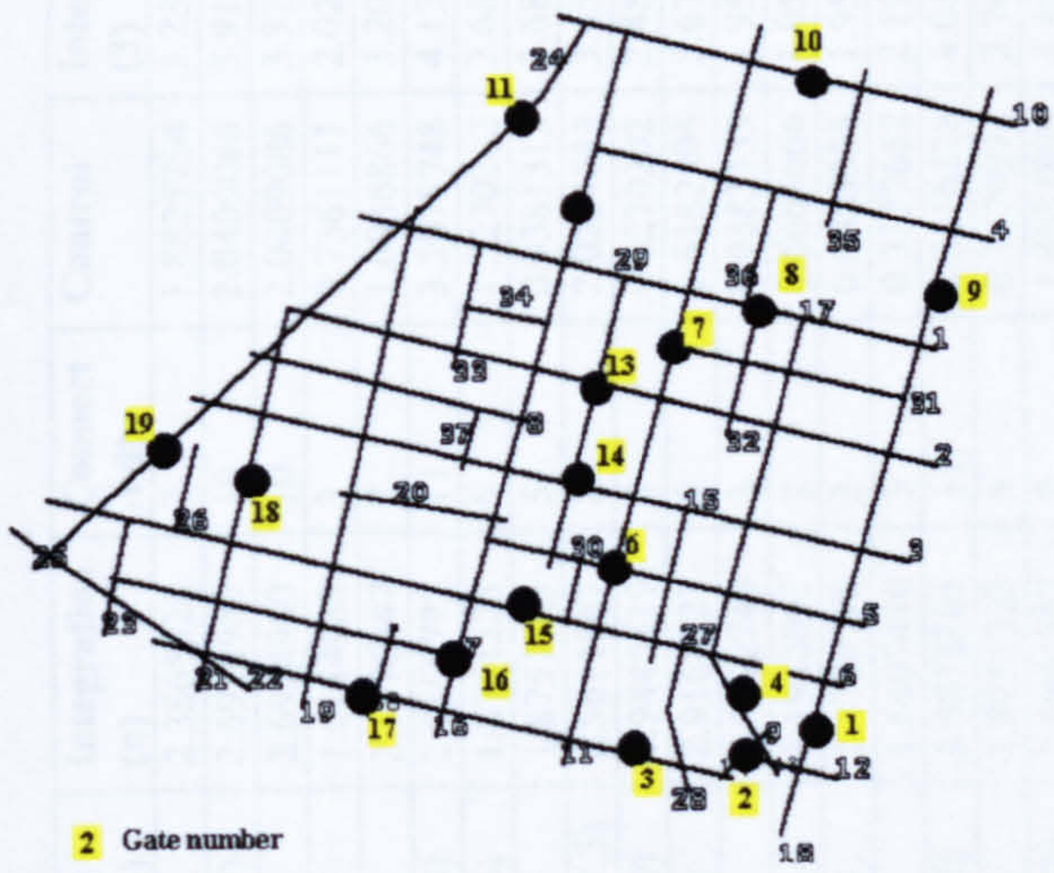


Figure 5A -4: Gate numbers of observation in Hsimenting

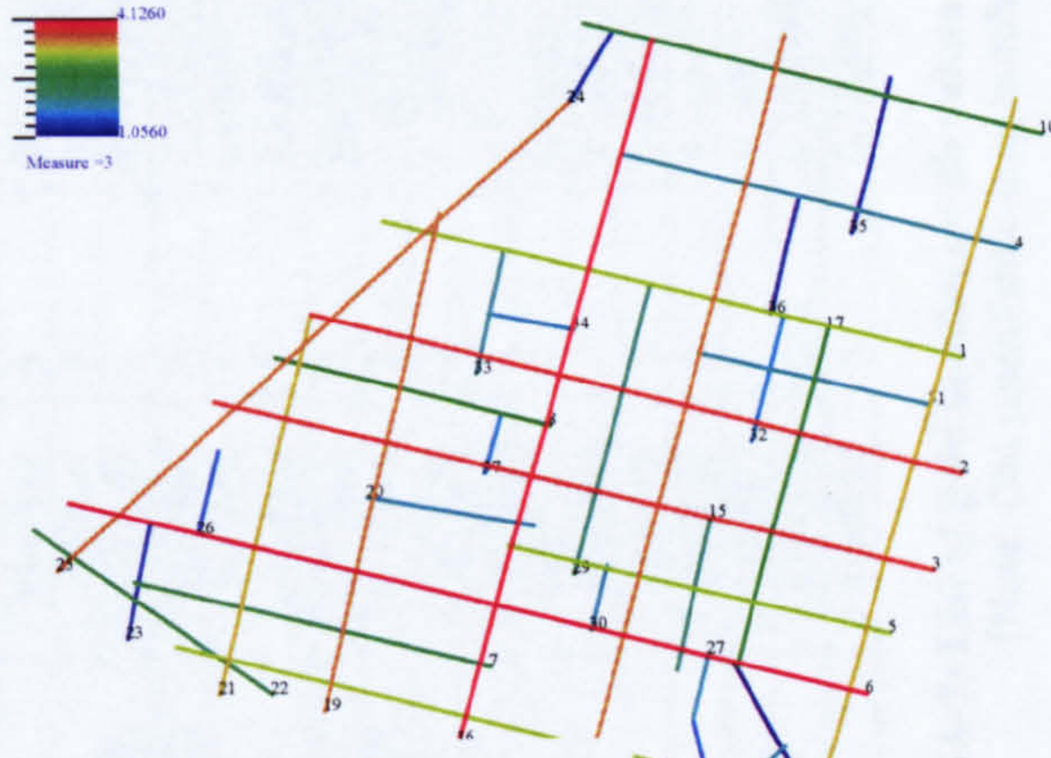
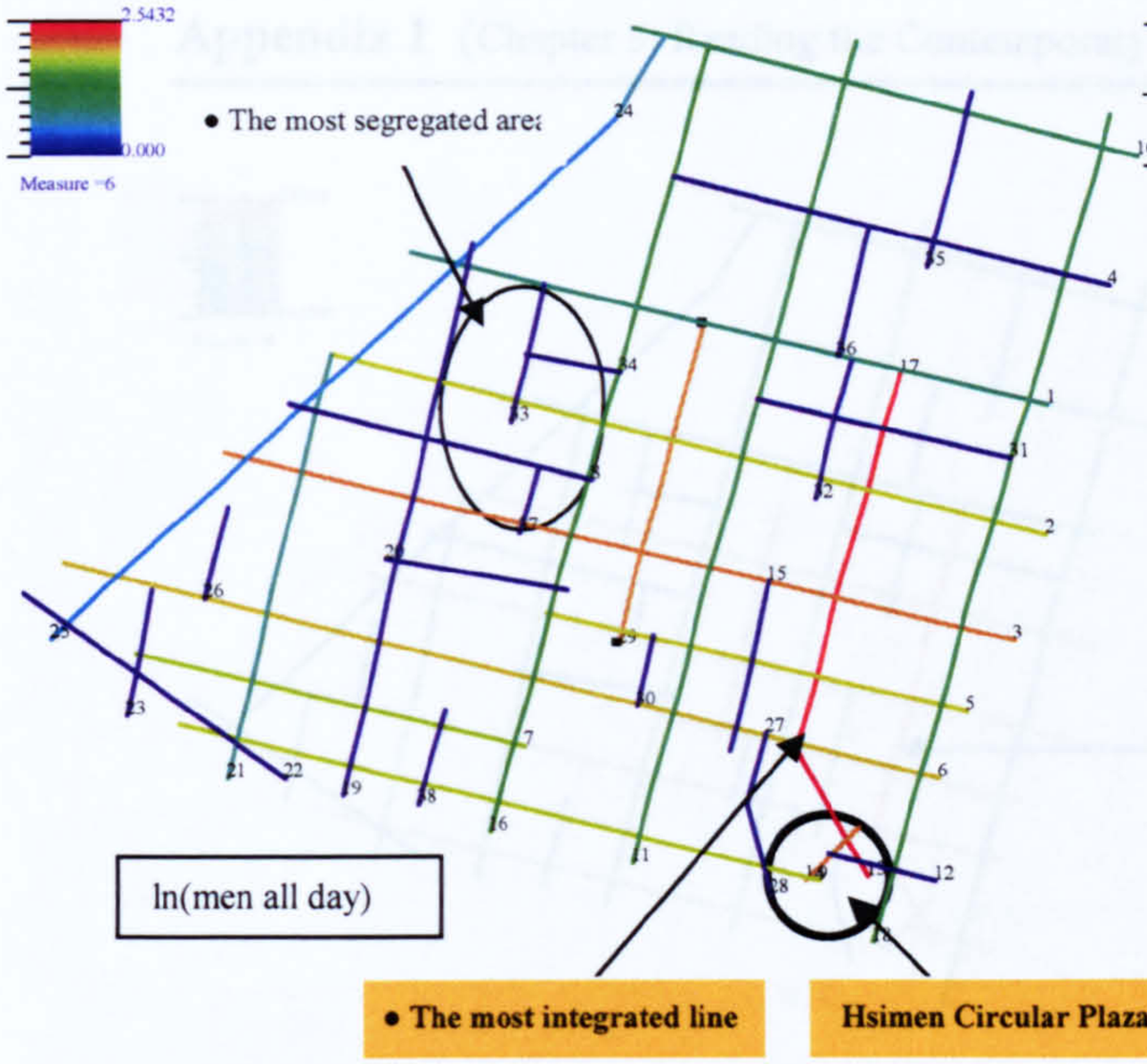
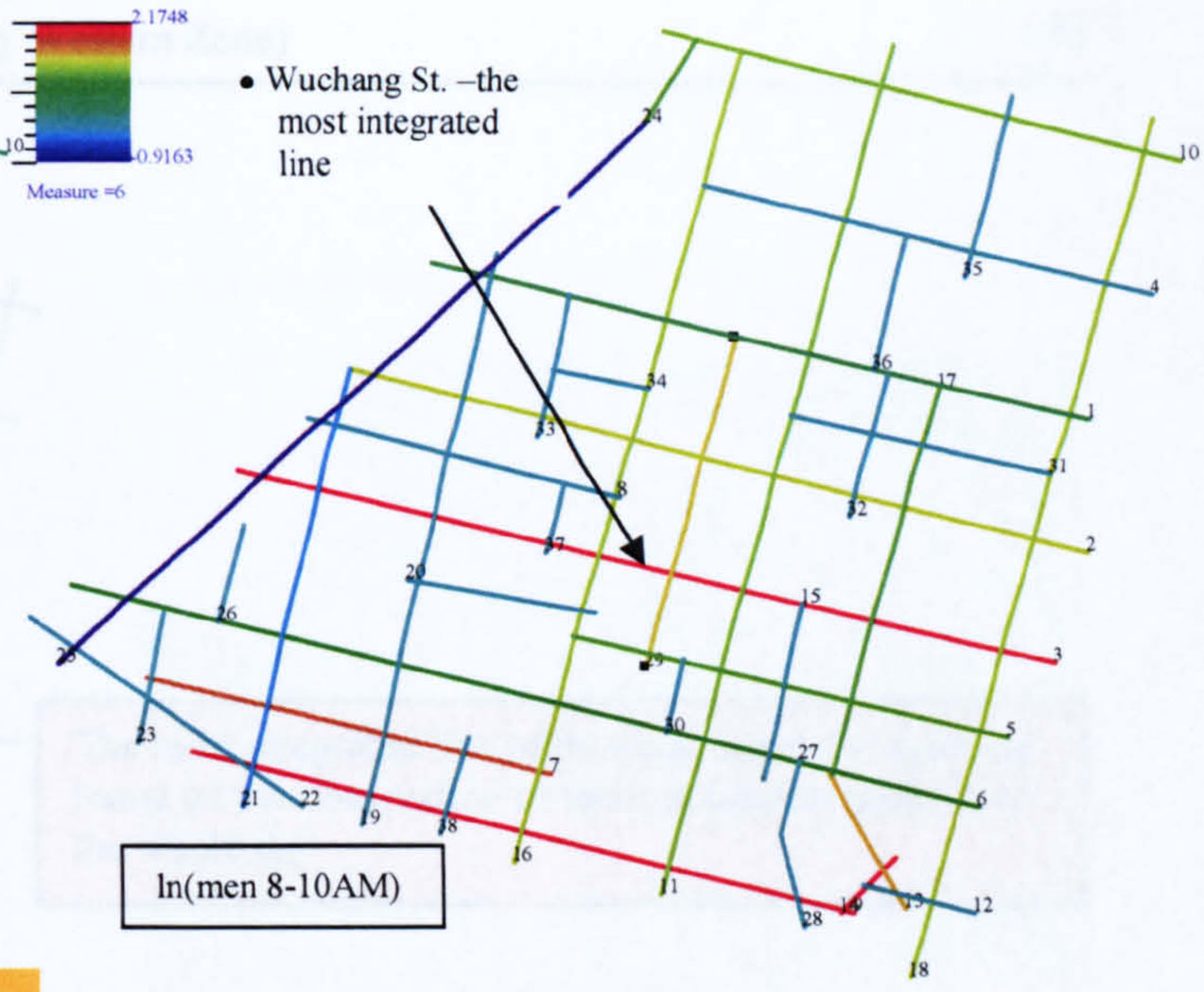


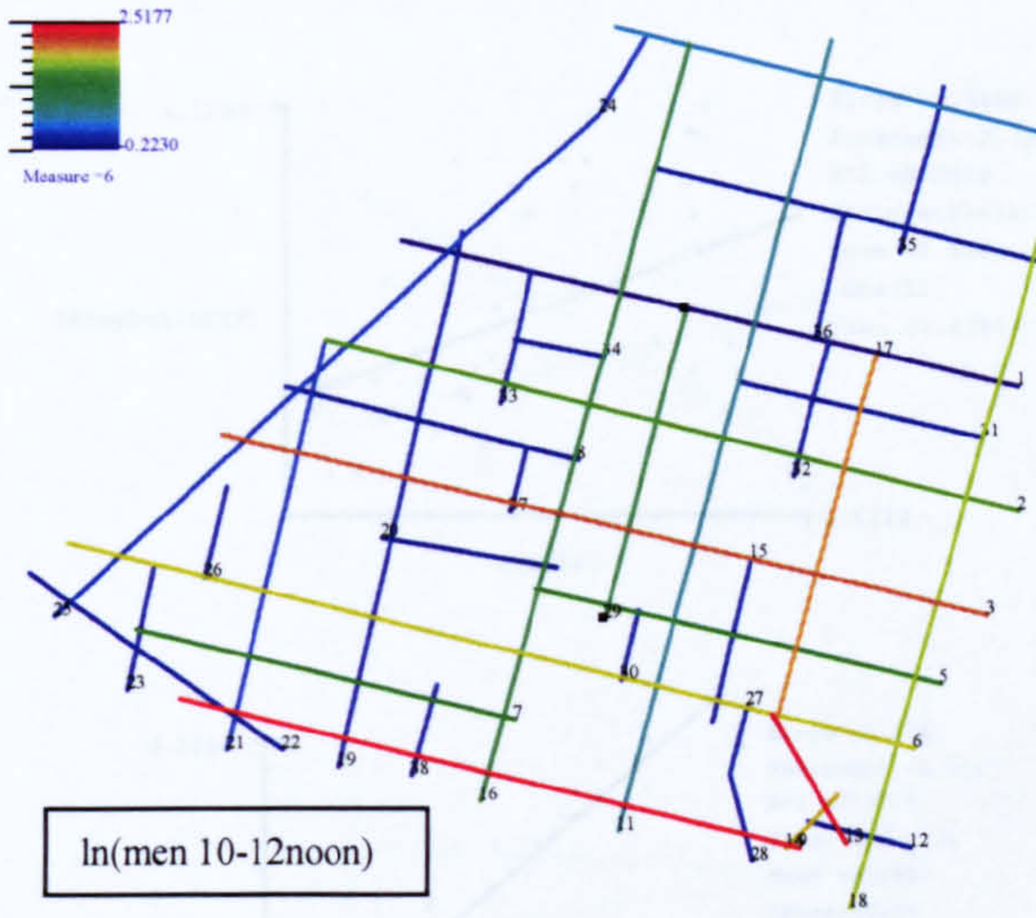
Figure 5A-3: Axial analysis of Hsimenting in local context

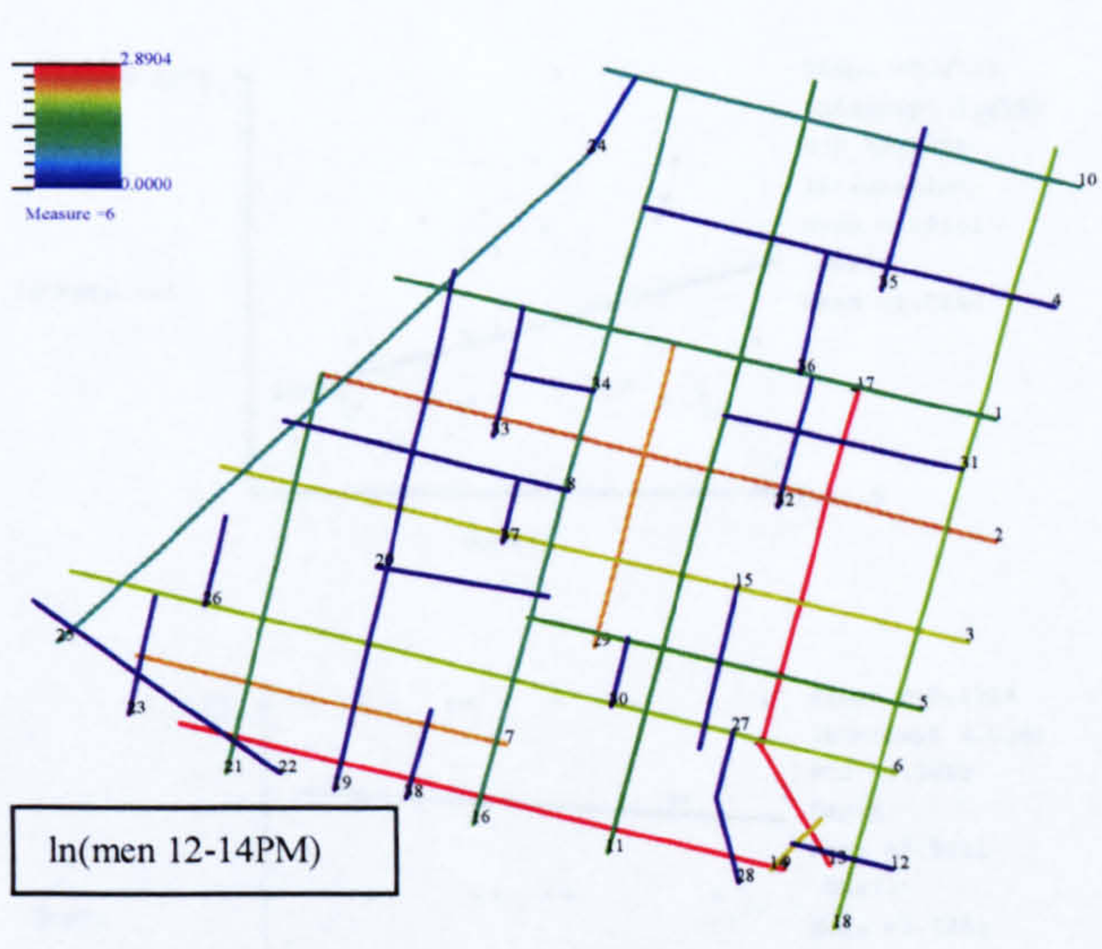
Index# (gate no)	Integration (n)	Connect -ivity	Control	Integration (3)	Depth	Obs(Men) /Min - All	Ln(Men) /Min- All	Ln(men) 8-10a.m.	Ln(men) 10-12noon	Ln(men) 12-2p.m.	Ln(men) 2-4 p.m.	Ln(men) 4-6 p.m.
1 (8)	2.3865323	7	1.8825754	3.2358046	2	2.7000	0.9933	0.4700	-0.2231	1.1632	1.1632	1.3863
2 (13)	2.6924980	10	2.0409086	3.9189196	2	6.6700	1.9021	1.3863	1.4816	2.4849	1.7918	1.9741
3	2.6924980	10	2.0409086	3.9189196	2	6.9000	2.1518	0.0000	0.0000	0.0000	0.0000	0.0000
4	1.6154988	3	0.7361111	2.0206244	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5 (6)	2.1876547	7	1.6936866	3.2085962	2	6.9000	1.9315	1.0296	1.2809	1.7228	2.7973	1.7918
6 (15)	2.9168727	11	3.2075748	4.1259847	2	7.2000	1.9741	0.6931	1.8563	2.0281	2.4159	2.1748
7 (16)	1.8751323	5	1.3270202	2.6888587	2	6.2000	1.8245	0.1823	1.2809	2.3795	2.0794	1.9741
8	1.8751323	5	0.9381313	2.6888587	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9 (17,3)	2.5611567	8	2.0214643	3.4578705	2	6.5000	1.8718	2.1748	2.4159	2.8214	2.8792	2.6672
10 (10)	1.9445819	4	0.8270202	2.4820232	2	2.7000	0.9933	1.1632	0.4700	1.0296	1.4816	0.4700
11 (7)	2.9168727	9	1.6182896	3.6726539	3	3.3000	1.1939	1.1632	0.6931	1.4816	1.3863	1.0296
12	1.5672749	3	0.9583333	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13 (4)	1.1932662	2	0.6666666	1.0560313	4	12.700	2.5416	1.5686	2.5177	2.8679	2.7726	2.5494
14 (2)	1.4789778	3	0.9583333	1.9586495	3	8.6000	2.1518	0.8931	1.9169	2.2192	2.7473	2.2618
15	1.6407410	3	0.3337662	2.1966808	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16 (12)	3.3873363	11	2.3516228	4.0459433	1	3.8000	1.3350	1.2809	1.0296	1.1632	1.7918	1.2809
17 (5)	1.8751323	5	0.7670994	2.7493186	3	11.4000	2.4336	1.0296	2.0281	2.8904	2.6672	2.6672
18 (1,9)	2.5001767	8	1.4932896	3.4651763	3	3.5000	1.2528	1.2809	1.7228	1.9169	2.2182	2.2192
19	2.8380384	9	1.5698769	3.6726539	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1.6667843	2	0.2020202	1.8919226	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21 (18)	2.6251855	8	1.1770200	3.4745131	3	2.5000	0.9163	-0.2231	0.1823	1.2809	1.2809	1.1632
22	1.9445819	4	0.8611111	2.4820232	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	1.3125927	2	0.4500000	1.4784206	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24 (11)	1.3637327	1	0.1111111	1.3750452	4	2.1000	0.7419	1.0296	0.1823	0.1823	1.3863	0.1823
25 (19)	2.5611567	9	2.1198769	3.6690104	3	1.8000	0.5878	-0.9163	0.1823	1.0296	0.6931	0.8755
26	1.4584364	1	0.0909091	1.5669198	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	1.5672749	2	0.5909091	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	1.5218468	2	0.6250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29 (14)	1.6154988	3	0.3428571	2.1966808	3	8.3000	2.1163	1.4816	1.0296	2.3795	2.6672	2.2192
30	1.5442268	2	0.2337662	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	1.5442268	3	0.8111111	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	1.4384578	2	0.4333333	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	1.5218468	3	0.7428571	2.0811150	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	1.6154988	2	0.4242424	1.8185619	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	1.1932662	2	0.5833333	1.1634564	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	1.3125927	1	0.1428571	1.1493285	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	1.4384578	2	0.3000000	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	1.4190192	2	0.3250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

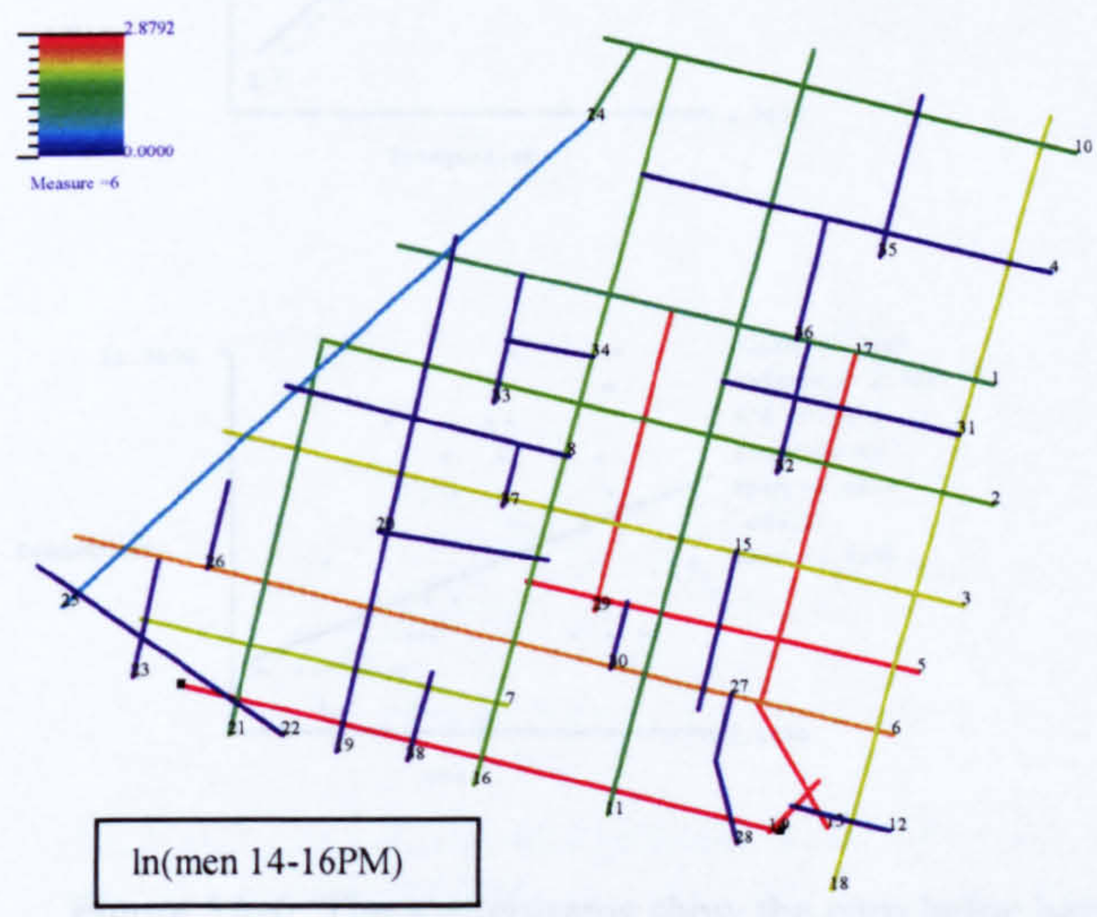
Table 5A-7: List of gate numbers with values of integration-n and -3, connectivity, control, depth and ln (moving men) per minute in Hsimenting
{Note: Obs (men)/min: total number of moving men per minute; the numbers in the bracket are gate numbers assigned for observation.}











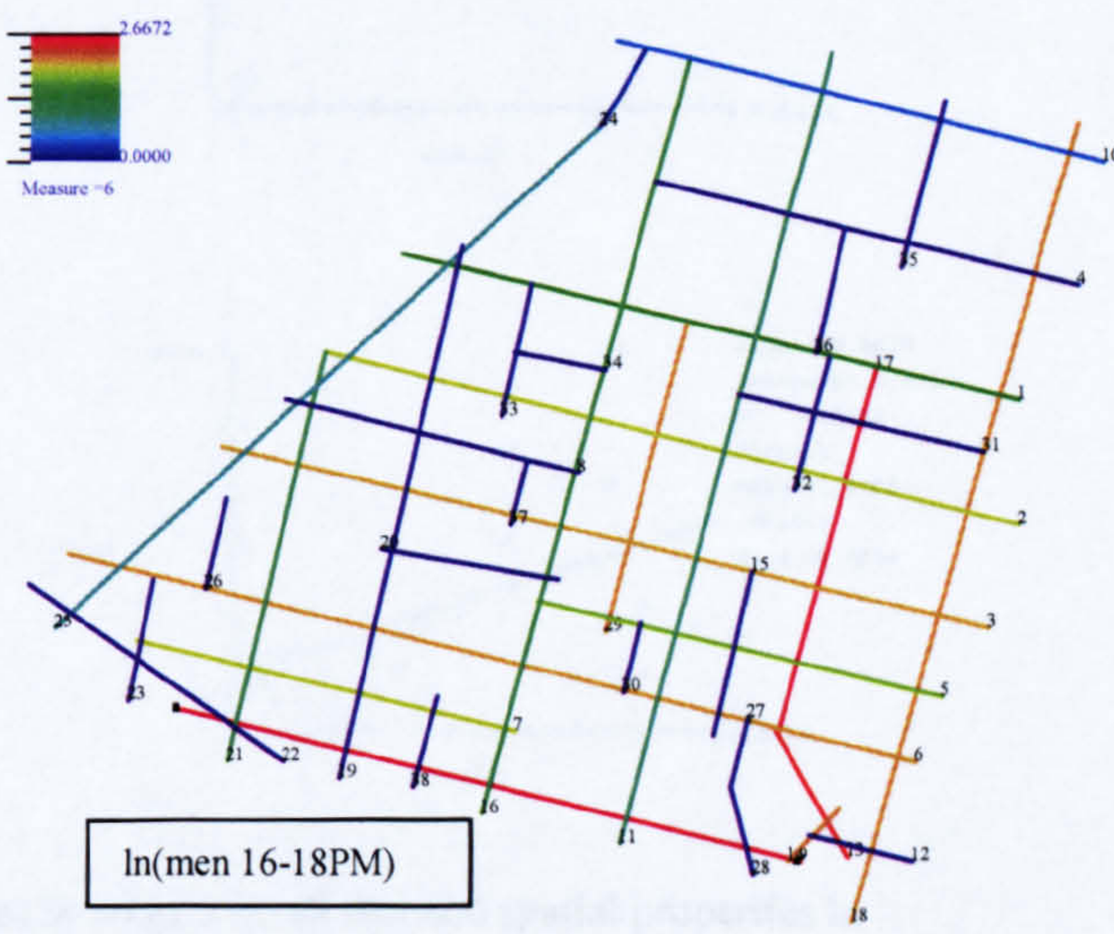
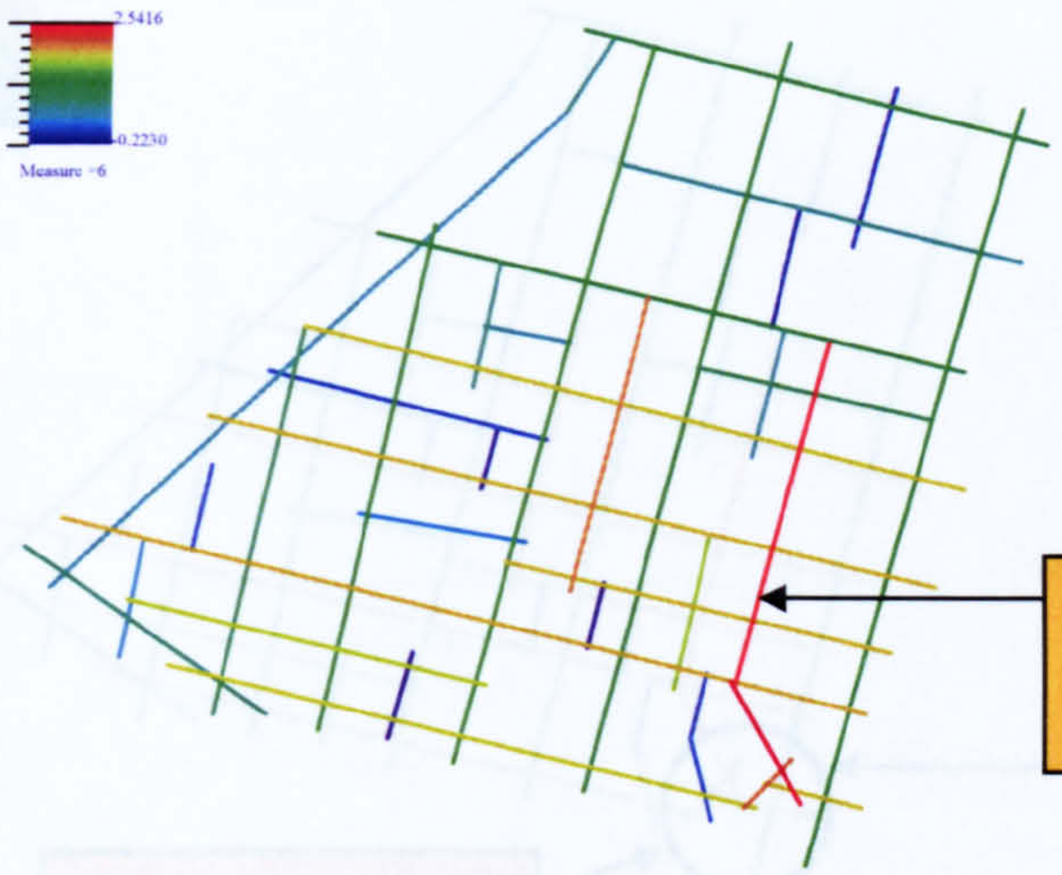
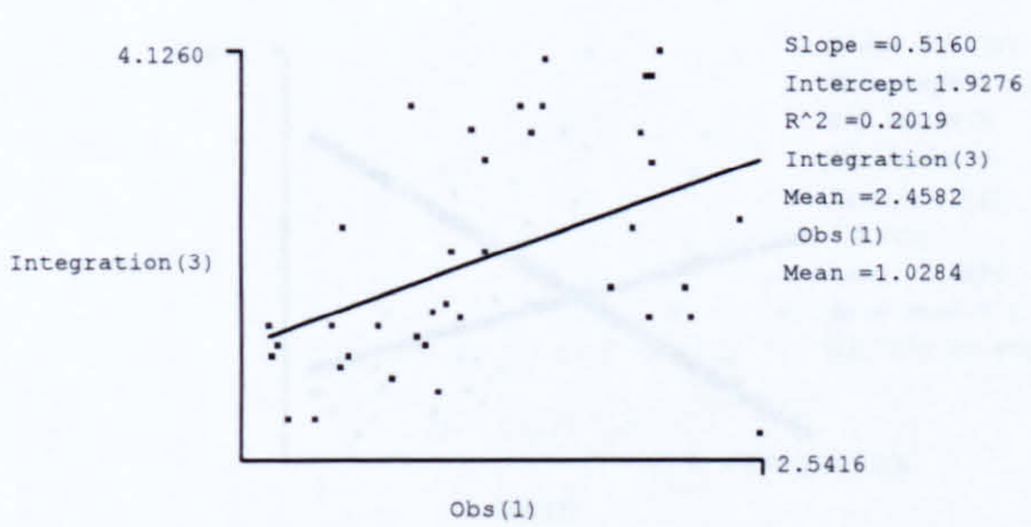
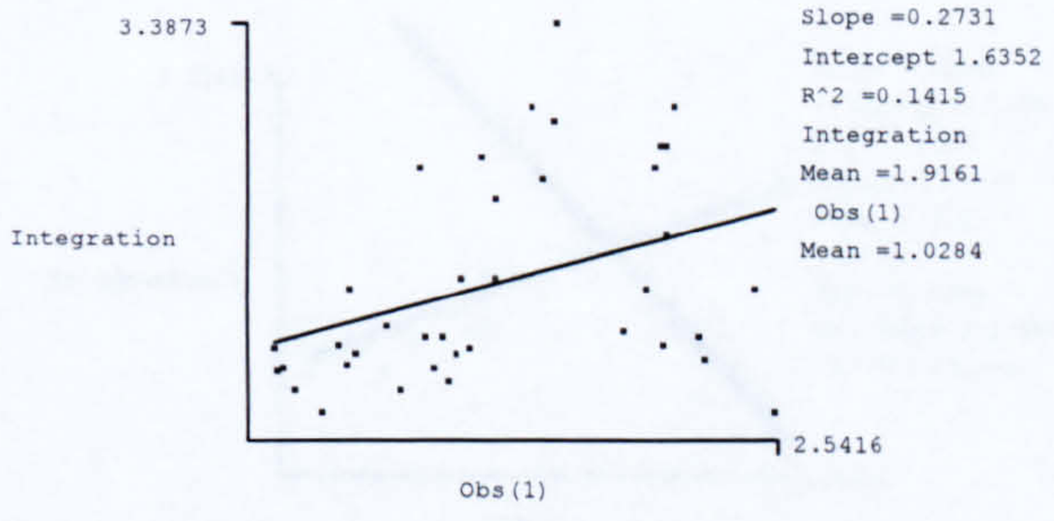


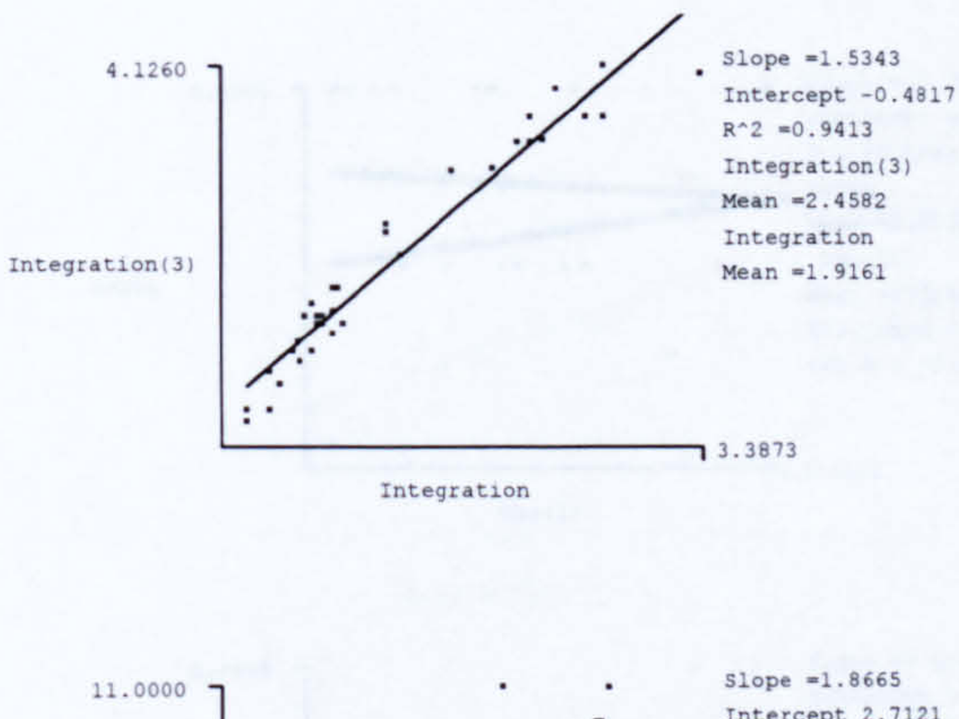
Figure 5A-5: The axial analyses of moving men at different periods from 8:00 am to 18:00 pm in Hsimen quarter

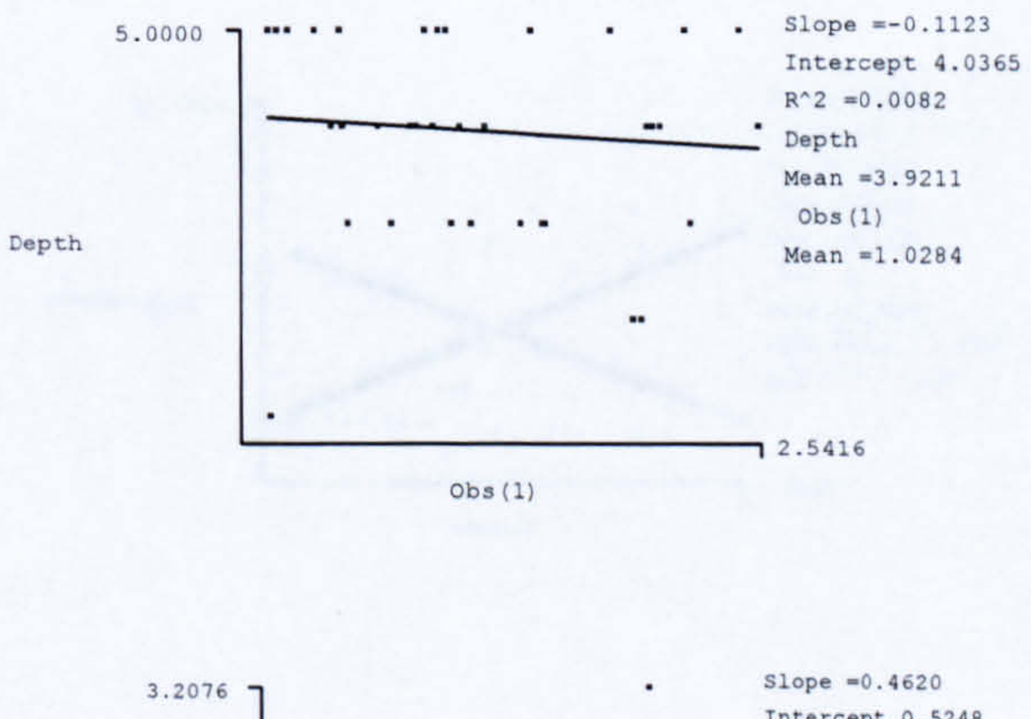


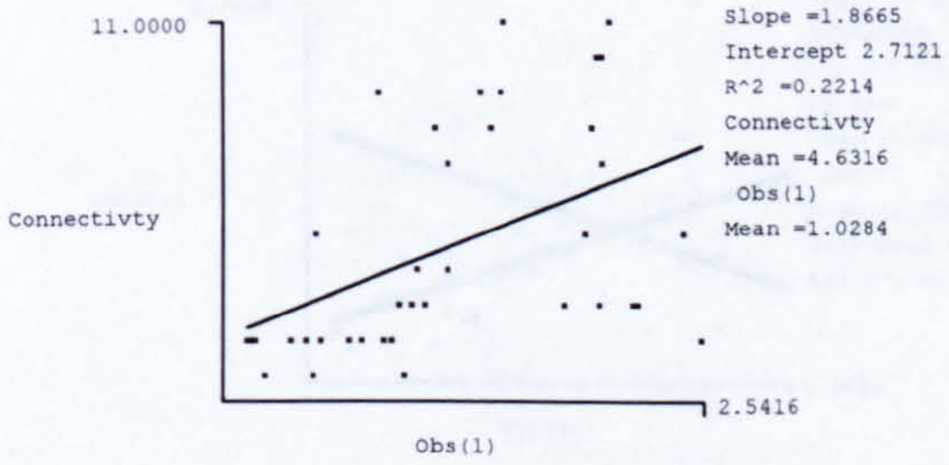
The most integrated line of moving men in Hsimenting based on the observation of their movement patterns in the whole day











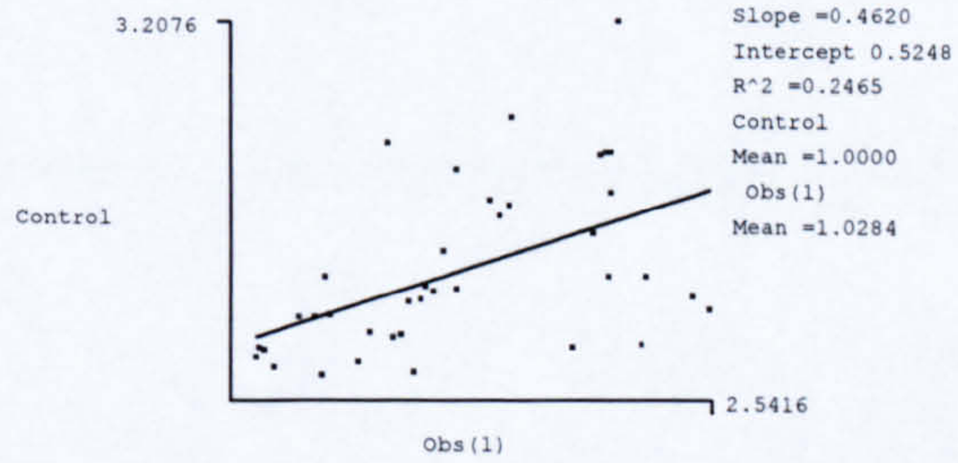
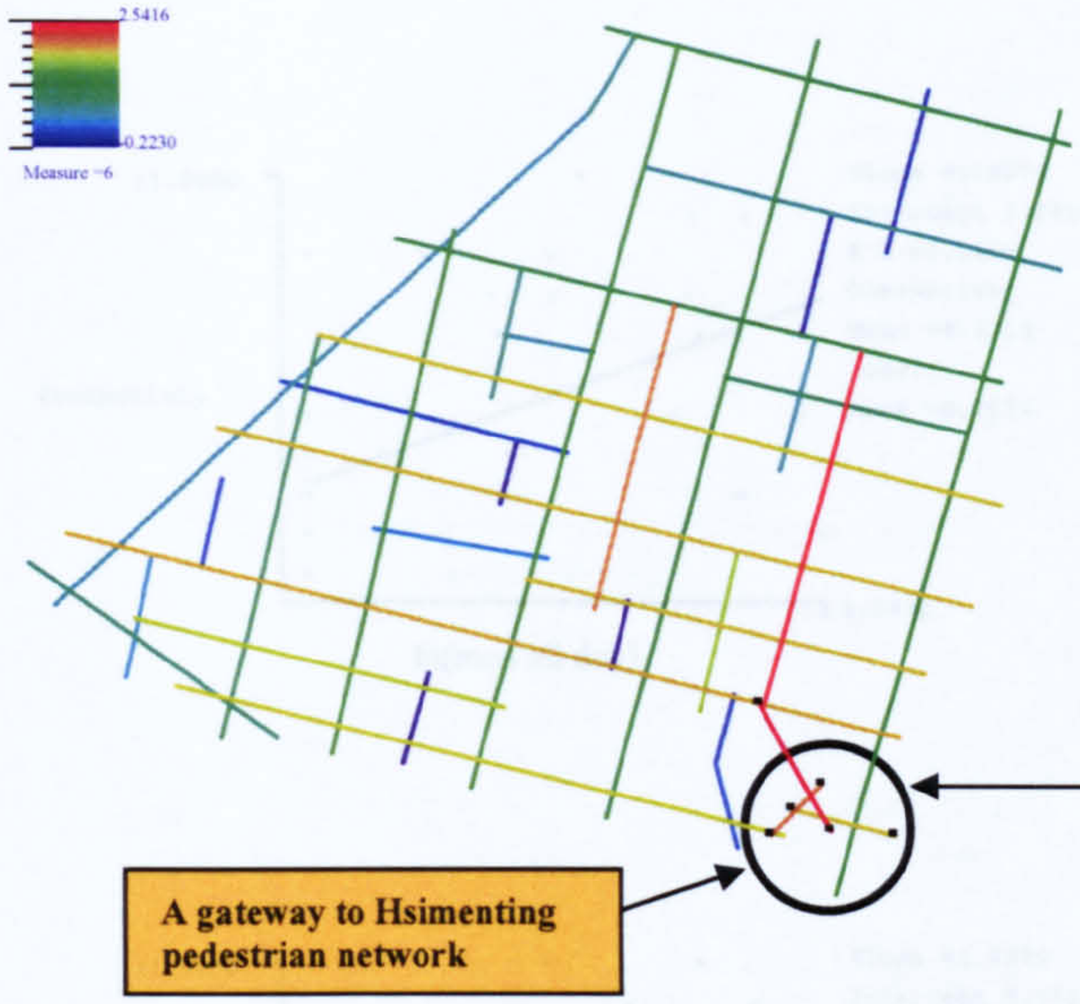
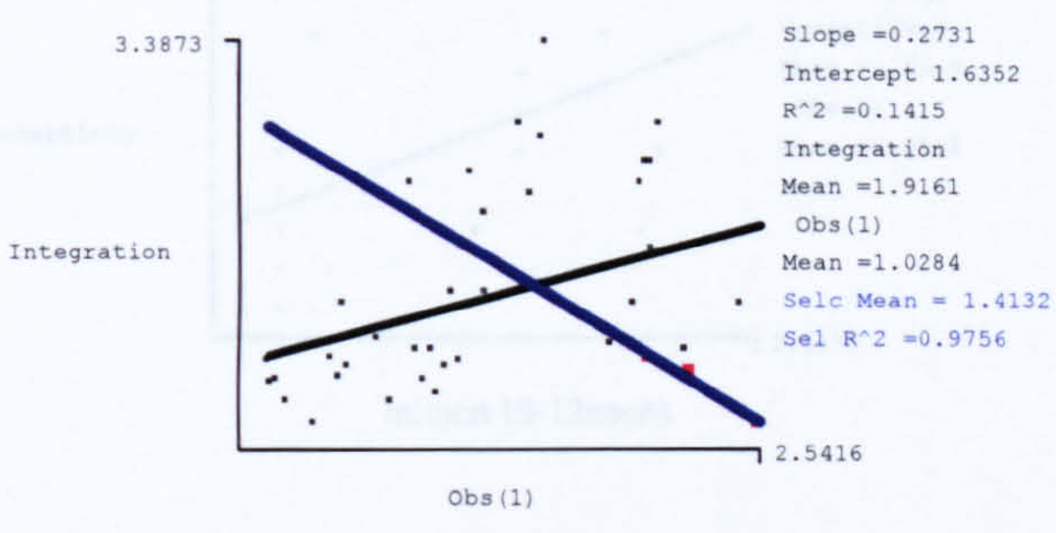
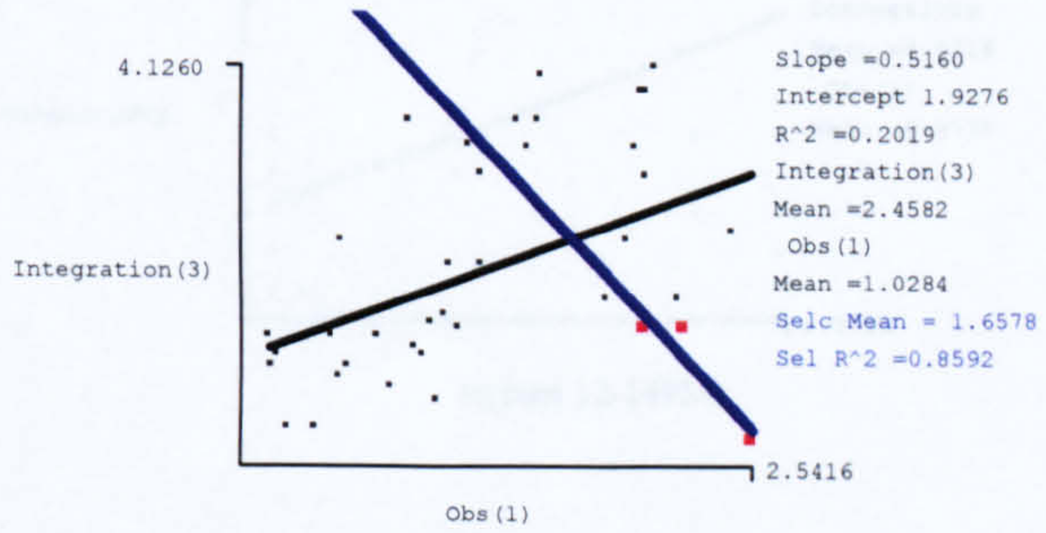


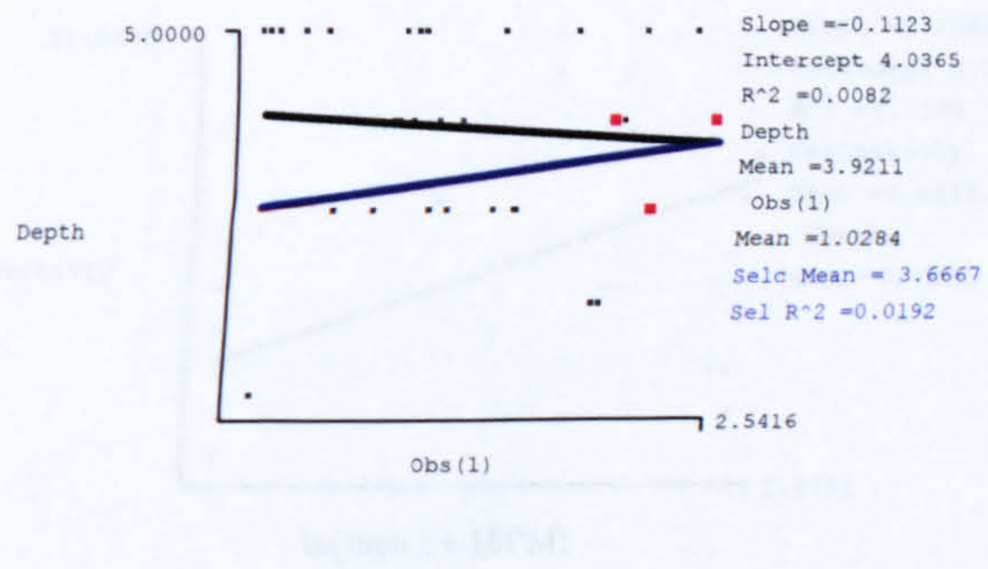
Figure 5A-6: The scattergrams show the correlation between moving men/all day and spatial properties in Hsimenting

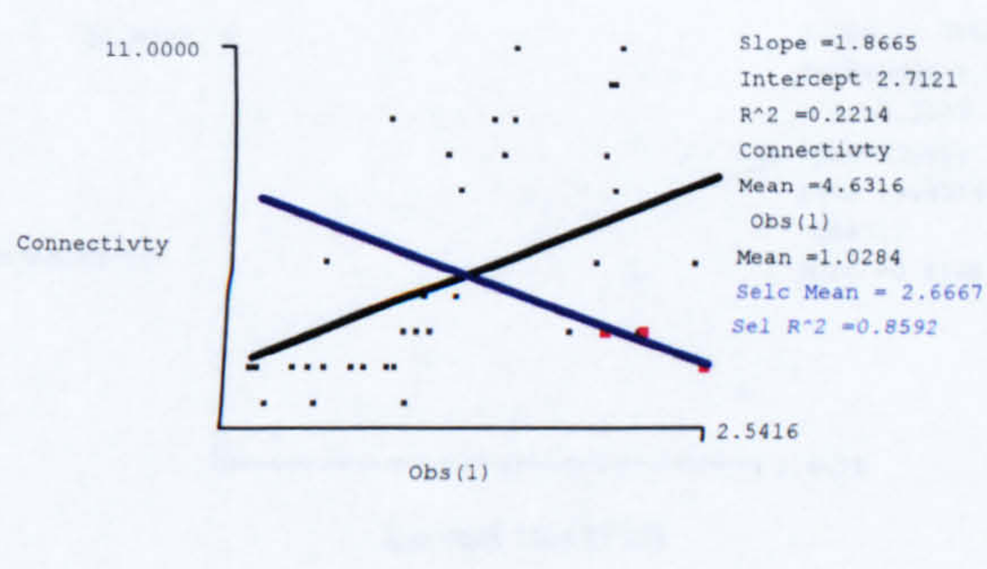


• A view of Hsimen Circular Plaza









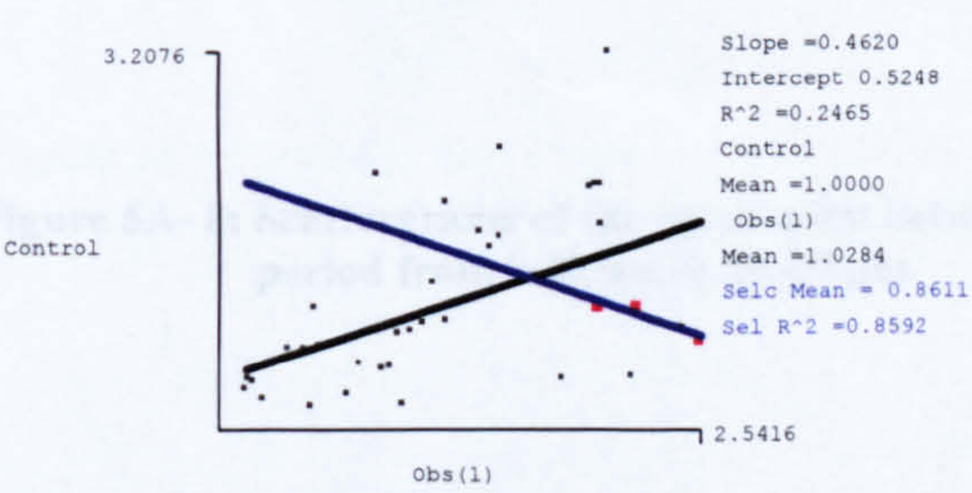
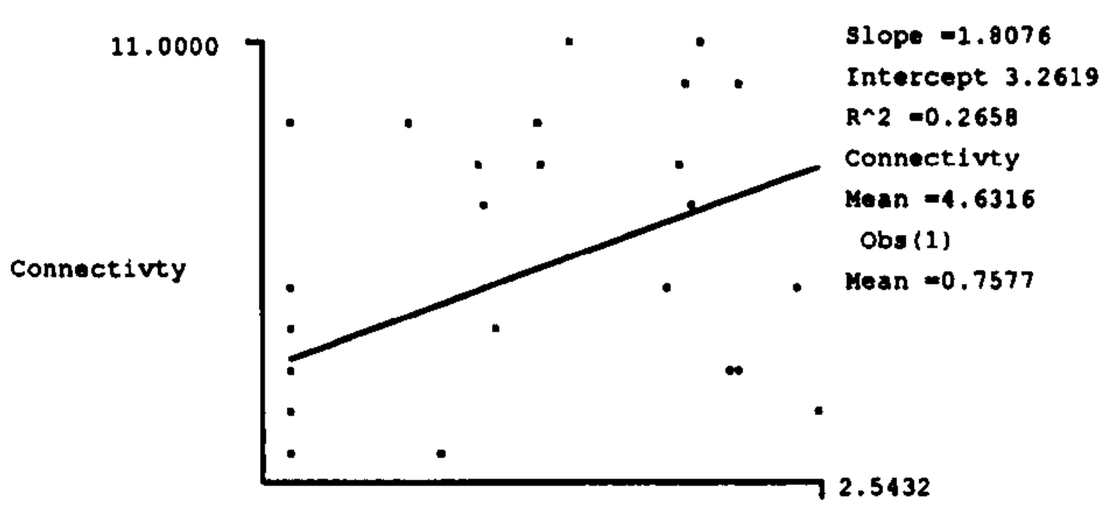
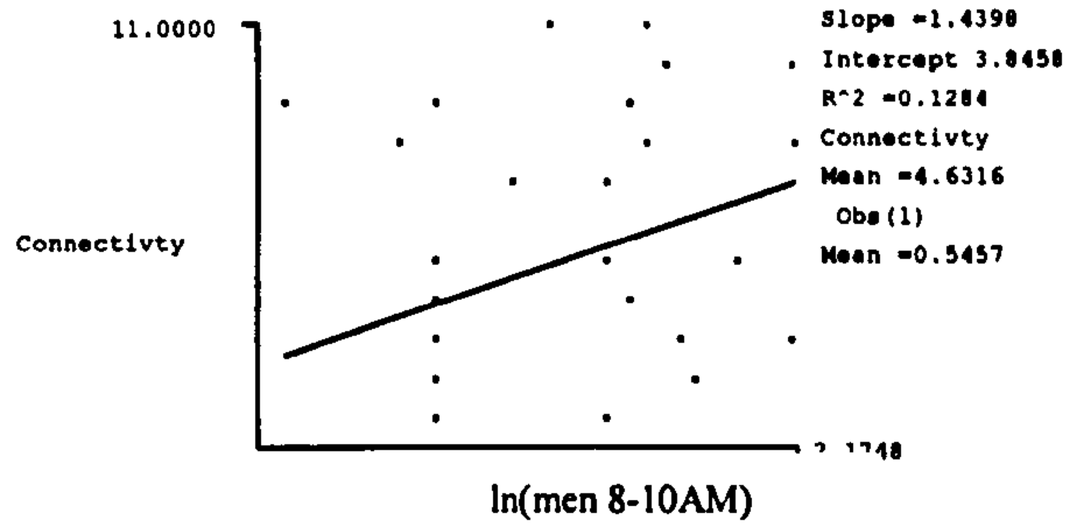


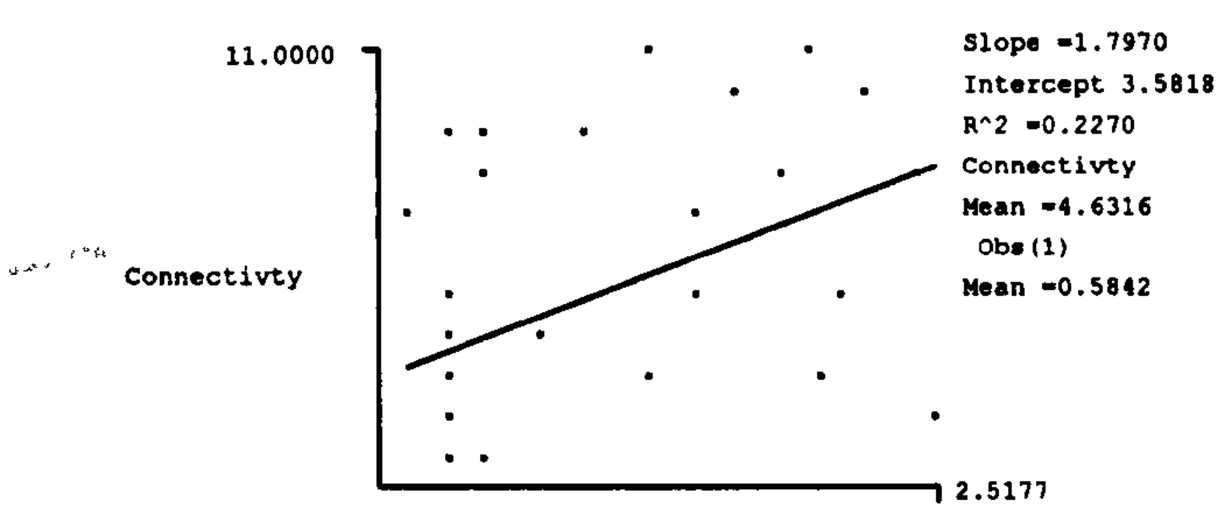
Fig.5A-7: The scattergrams show the correlation between moving men/all day and spatial properties at Hsimen circular plaza



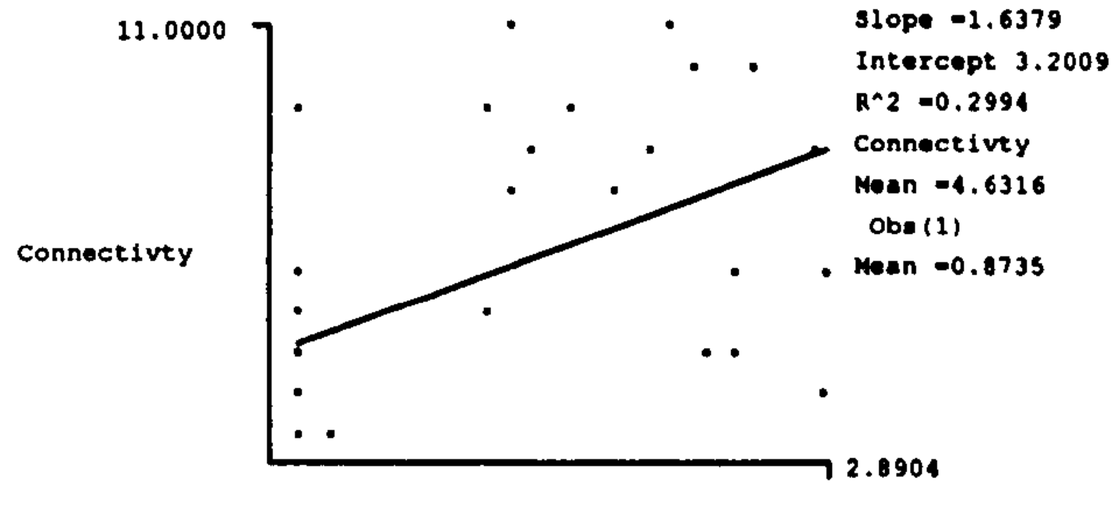
ln(men all day)



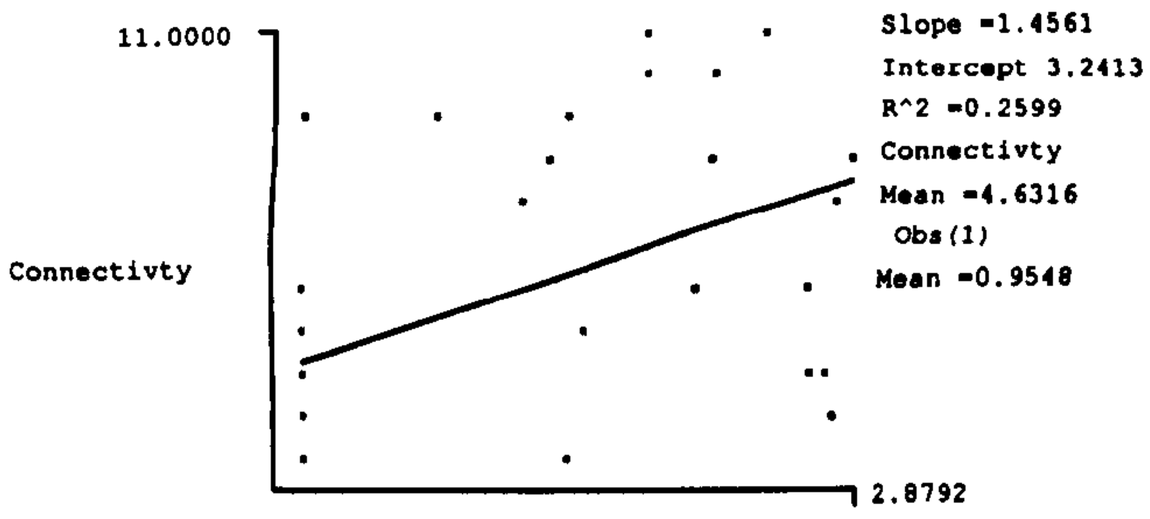
ln(men 8-10AM)



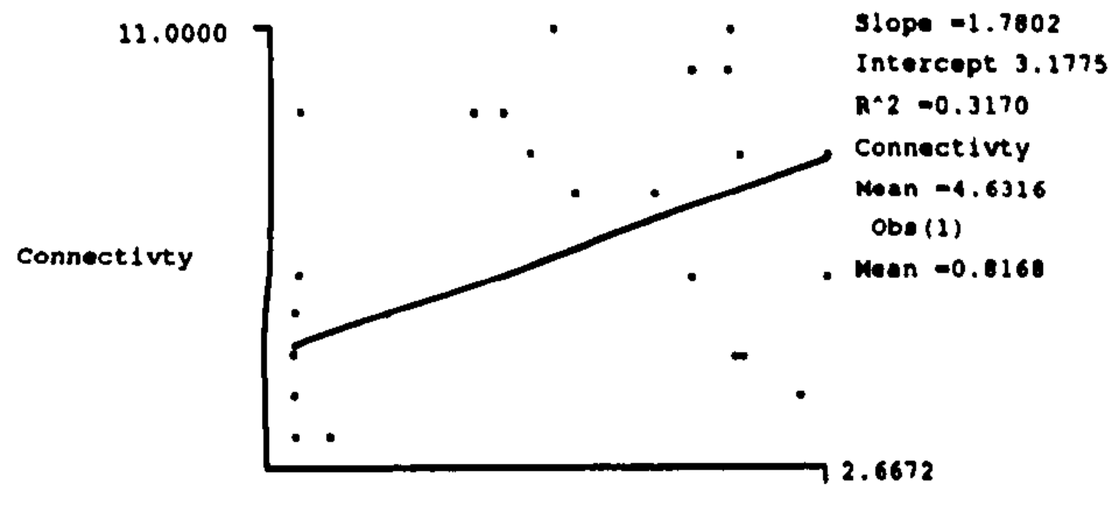
ln(men 10-12noon)



ln(men 12-14PM)

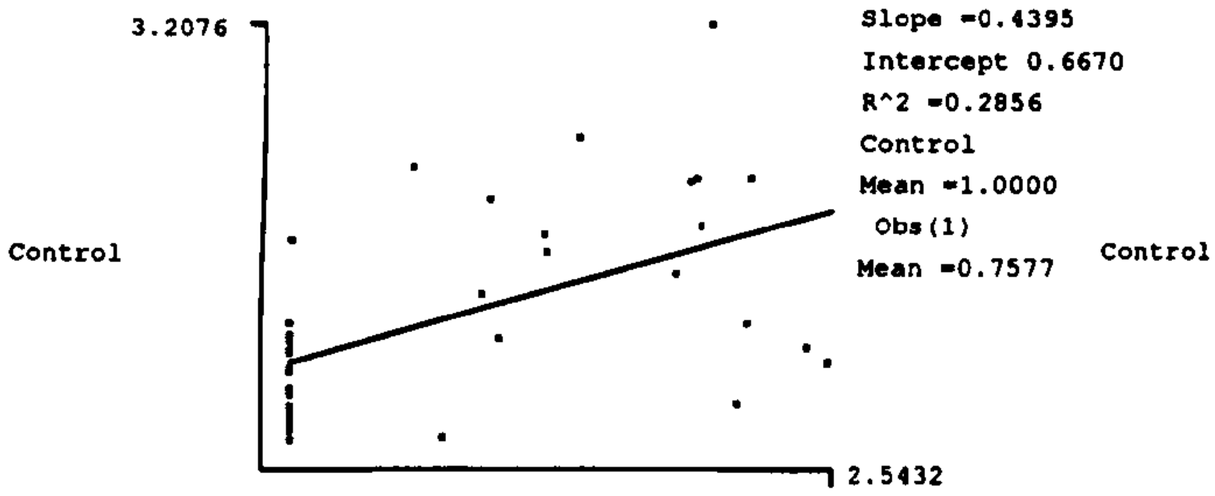


ln(men 14-16PM)

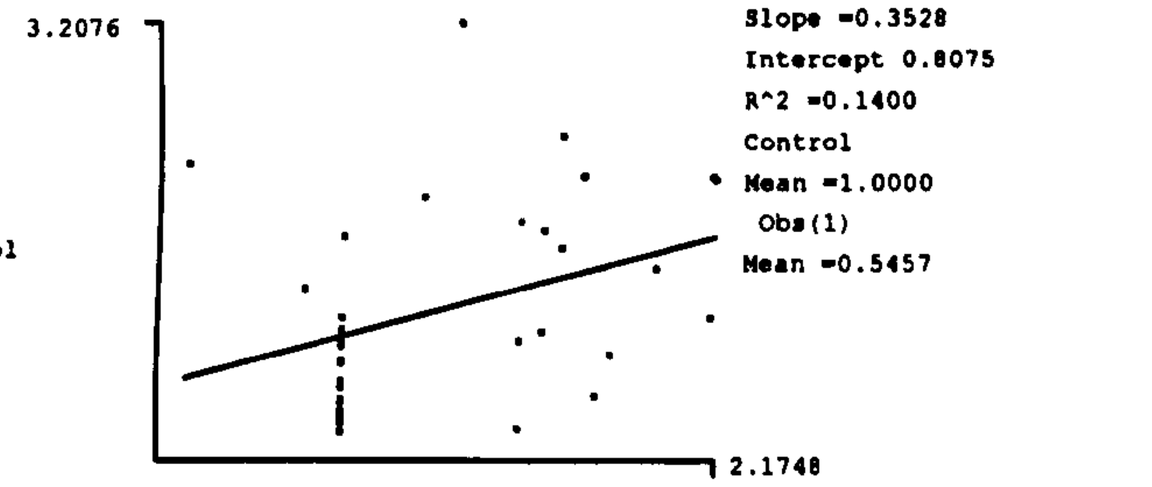


Ln(men 16-18PM)

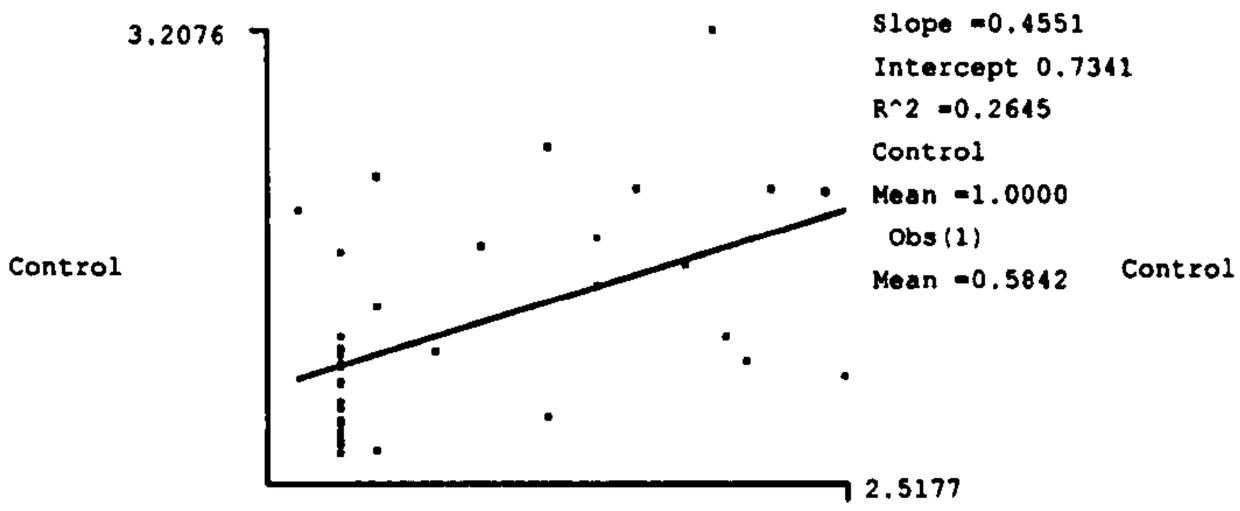
Figure 5A- 8: Scattergrams of the correlation between connectivity and ln (moving men)/minute in each period from 8:00 am to 18:00 pm



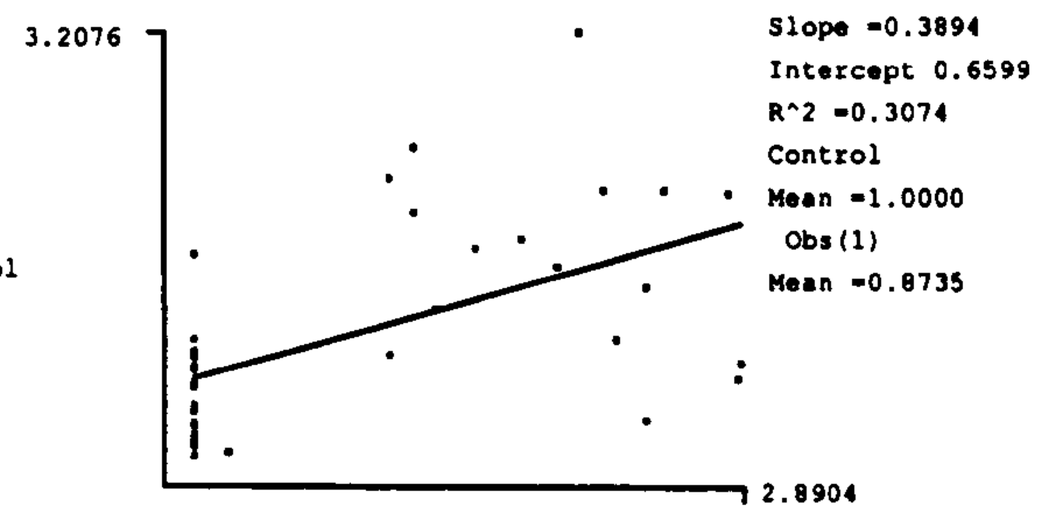
Ln(men all day)



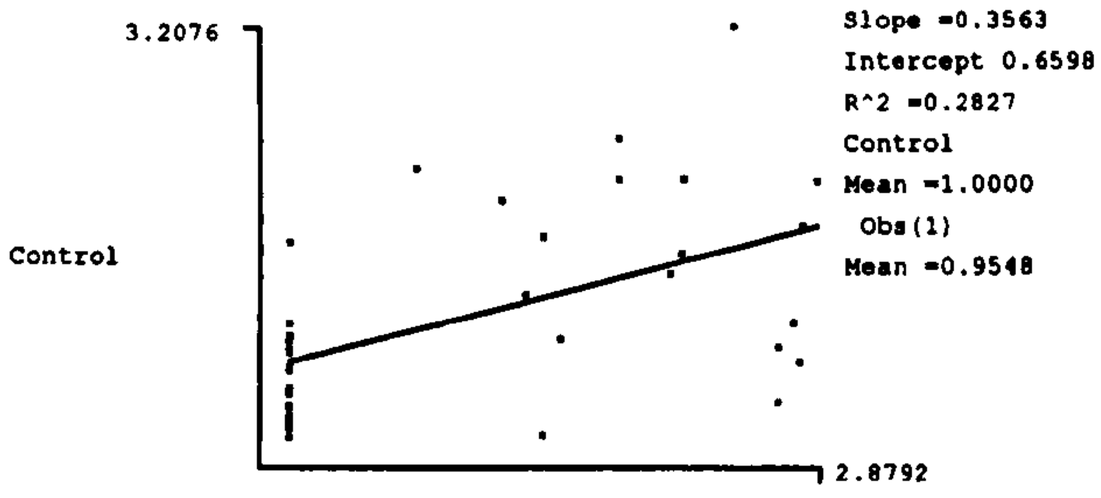
Ln(men 8-10AM)



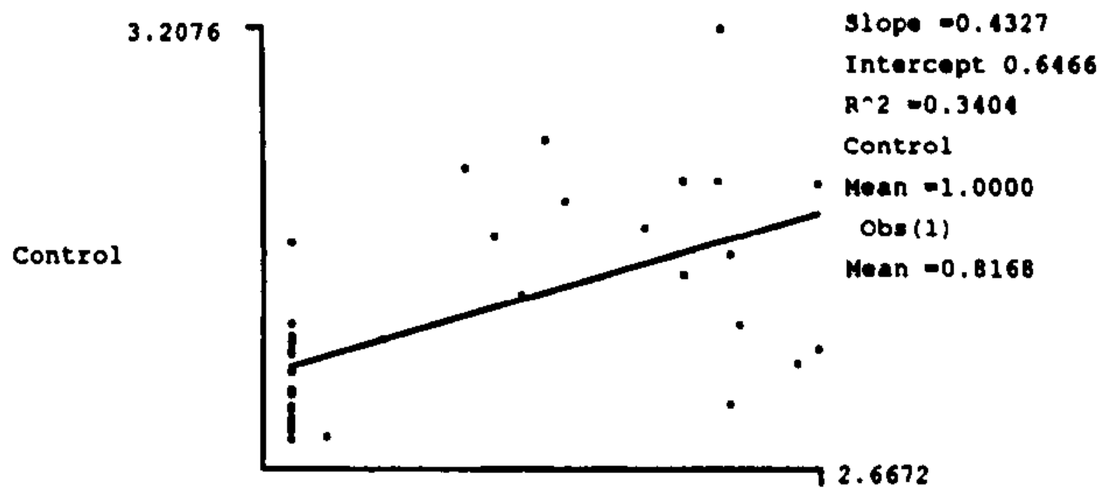
Ln(men 10-12noon)



Ln(men 12-14PM)



ln(men 14-16PM)

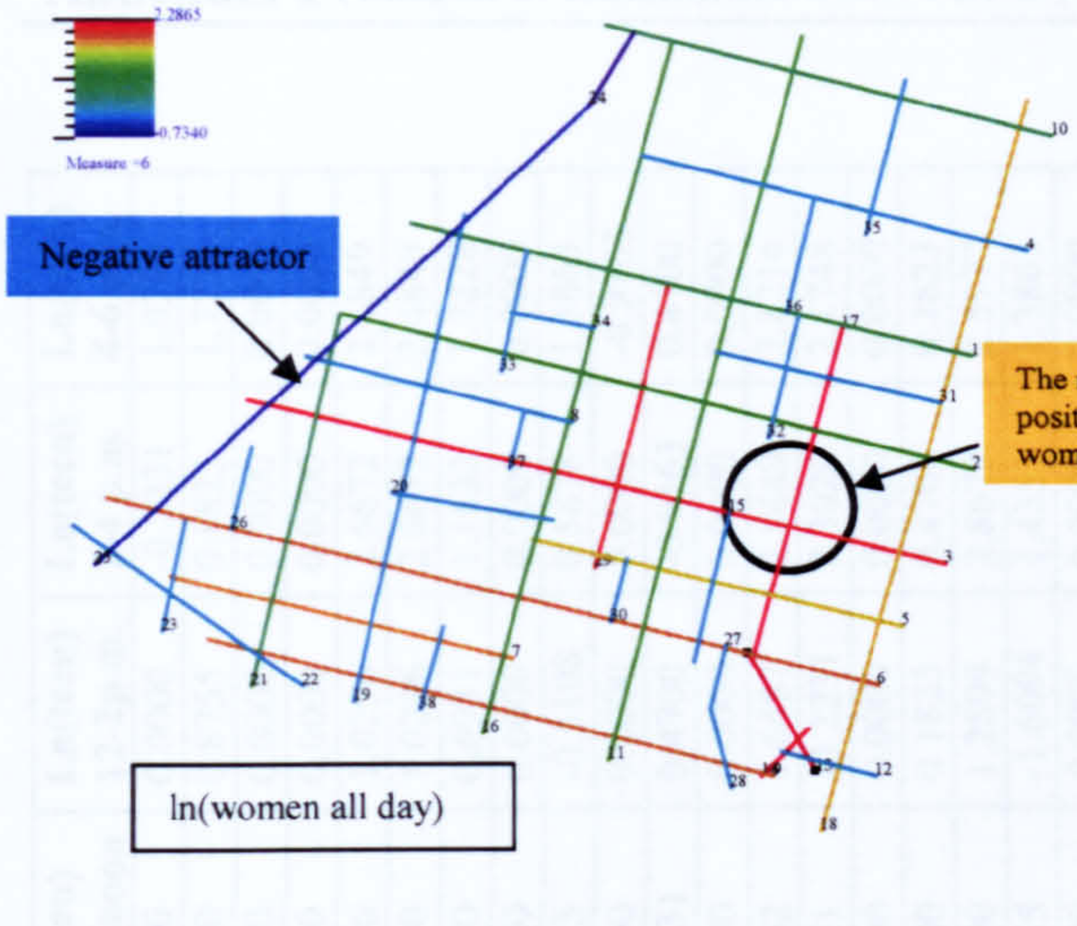


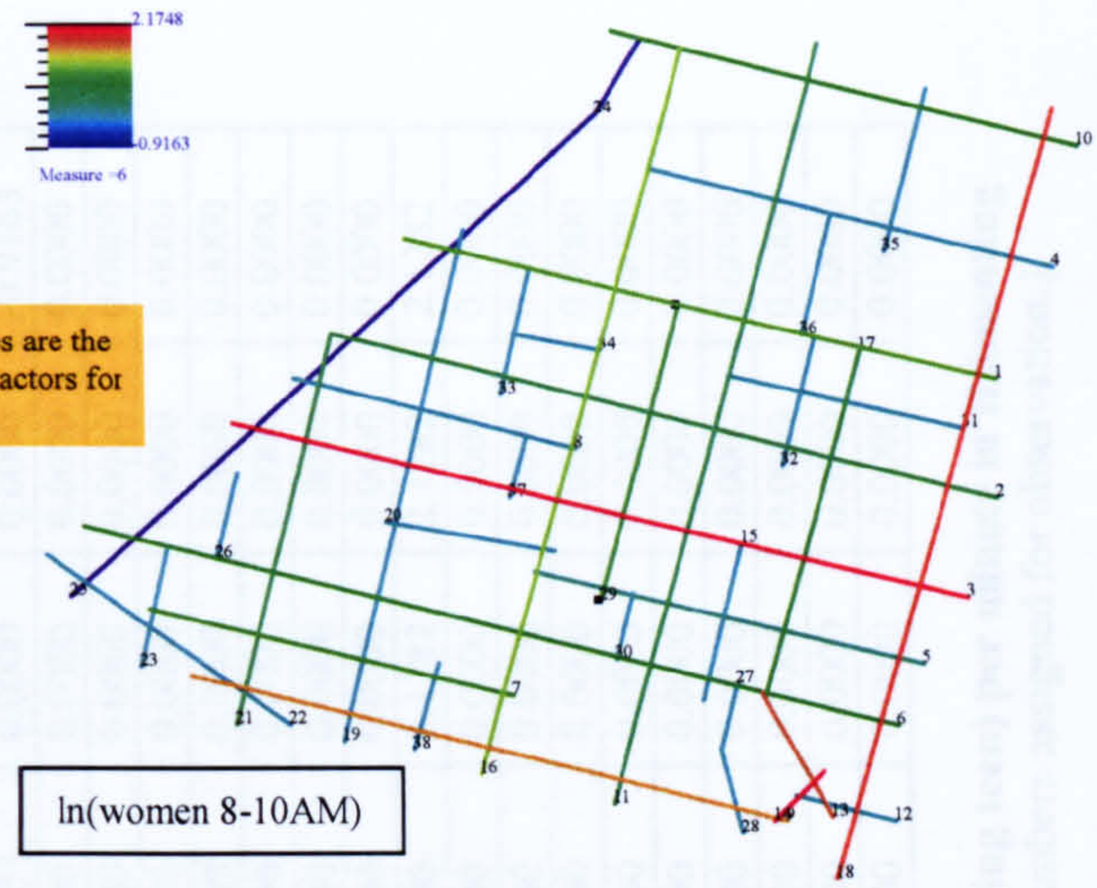
ln(men 16-18)

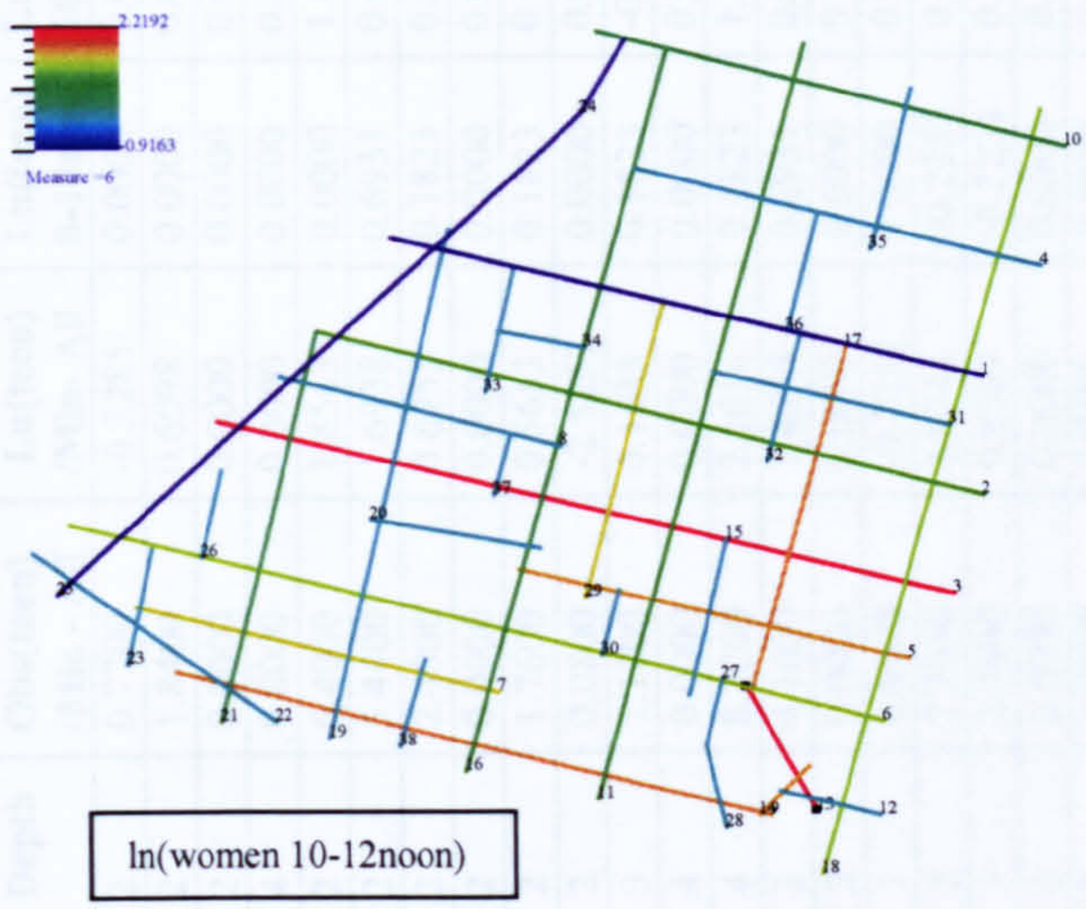
Figure 5A-9: Scattergrams of the correlation between control value and ln (moving men)/minute in each period from 8:00 am to 18:00 pm

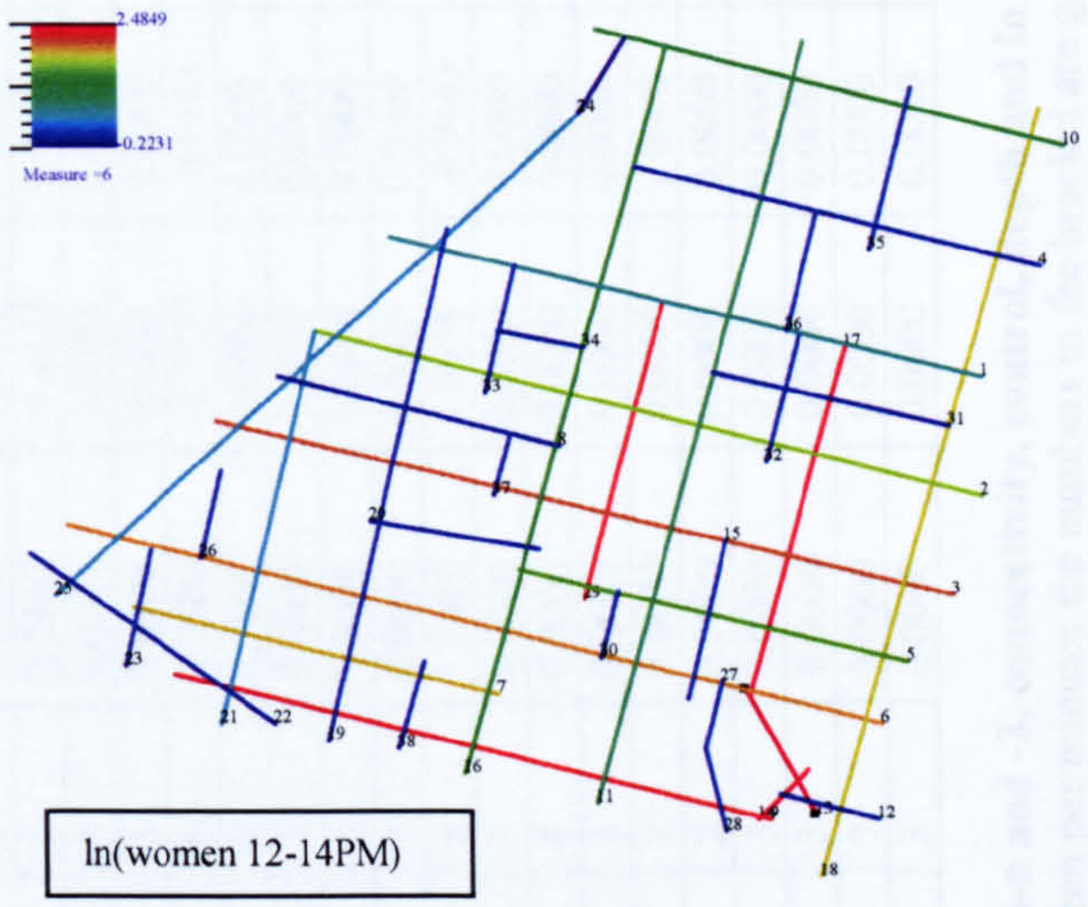
Index# (gate no)	Integration (n)	Connect -ivity	Control	Integration (3)	Depth	Obs(Women) /Min – All day	Ln(Women) /Min- All day	Ln(Women) 8-10a.m.	Ln(Women) 10-12noon	Ln(W) 12-2p.m.	Ln(W) 2-4 p.m.	Ln(W) 4-6 p.m.
1 (8)	2.3865323	7	1.8825754	3.2358046	2	1.7600	0.5653	1.0296	-0.9163	0.6931	1.0296	-0.2231
2 (13)	2.6924980	10	2.0409086	3.9189196	2	2.6400	0.9708	0.4700	1.0296	1.6487	0.8755	0.1823
3	2.6924980	10	2.0409086	3.9189196	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1.6154988	3	0.7361111	2.0206244	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5 (6)	2.1876547	7	1.6936866	3.2085962	2	5.1200	1.6332	0.1823	1.6487	1.4816	1.9169	2.0794
6 (15)	2.9168727	11	3.2075748	4.1259847	2	6.5600	1.8810	0.6931	1.2809	2.0281	2.0281	2.4849
7 (16)	1.8751323	5	1.3270202	2.6888587	2	6.1600	1.8181	0.8755	1.4816	1.9169	2.2192	2.0794
8	1.8751323	5	0.9381313	2.6888587	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9 (17,3)	2.5611567	8	2.0214643	3.4578705	2	6.4800	1.8687	1.6487	1.7228	2.3418	1.4351	1.9459
10 (10)	1.9445819	4	0.8270202	2.4820232	2	1.6800	0.5188	0.6931	0.4700	1.0296	0.4700	-0.9163
11 (7)	2.9168727	9	1.6182896	3.6726539	3	2.8000	1.0296	0.4700	0.8755	0.8755	1.2809	1.3863
12	1.5672749	3	0.9583333	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13 (4)	1.1932662	2	0.6666666	1.0560313	4	9.8400	2.2865	1.7918	2.2192	2.4849	2.1748	2.5802
14 (2)	1.4789778	3	0.9583333	1.9586495	3	8.8800	2.1838	2.1748	1.6487	2.5410	2.3418	2.1282
15	1.6407410	3	0.3337662	2.1966808	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16 (12)	3.3873363	11	2.3516228	4.0459433	1	2.4800	0.9083	1.1632	0.6931	1.1632	0.4700	0.8755
17 (5)	1.8751323	5	0.7670994	2.7493186	3	9.4400	2.2450	0.6931	1.7228	2.4159	2.4510	2.8214
18 (1,9)	2.5001767	8	1.4932896	3.4651763	3	5.4600	1.6864	1.9169	1.2238	1.8563	1.5686	1.7228
19	2.8380384	9	1.5698769	3.6726539	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1.6667843	2	0.2020202	1.8919226	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21 (18)	2.6251855	8	1.1770200	3.4745131	3	1.7600	0.5653	0.4700	0.4700	0.4700	0.4700	0.8755
22	1.9445819	4	0.8611111	2.4820232	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	1.3125927	2	0.4500000	1.4784206	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24 (11)	1.3637327	1	0.1111111	1.3750452	4	0.4800	-0.7340	-0.9163	0.0000	-0.2231	0.1823	0.0000
25 (19)	2.5611567	9	2.1198769	3.6690104	3	0.8400	-0.4463	-0.9163	-0.9163	0.4700	0.0000	-0.2231
26	1.4584364	1	0.0909091	1.5669198	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	1.5672749	2	0.5909091	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	1.5218468	2	0.6250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29 (14)	1.6154988	3	0.3428571	2.1966808	3	8.1600	2.0992	0.8755	1.4816	2.3795	2.7726	1.9741
30	1.5442268	2	0.2337662	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	1.5442268	3	0.8111111	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	1.4384578	2	0.4333333	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	1.5218468	3	0.7428571	2.0811150	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	1.6154988	2	0.4242424	1.8185619	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	1.1932662	2	0.5833333	1.1634564	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	1.3125927	1	0.1428571	1.1493285	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	1.4384578	2	0.3000000	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	1.4190192	2	0.3250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

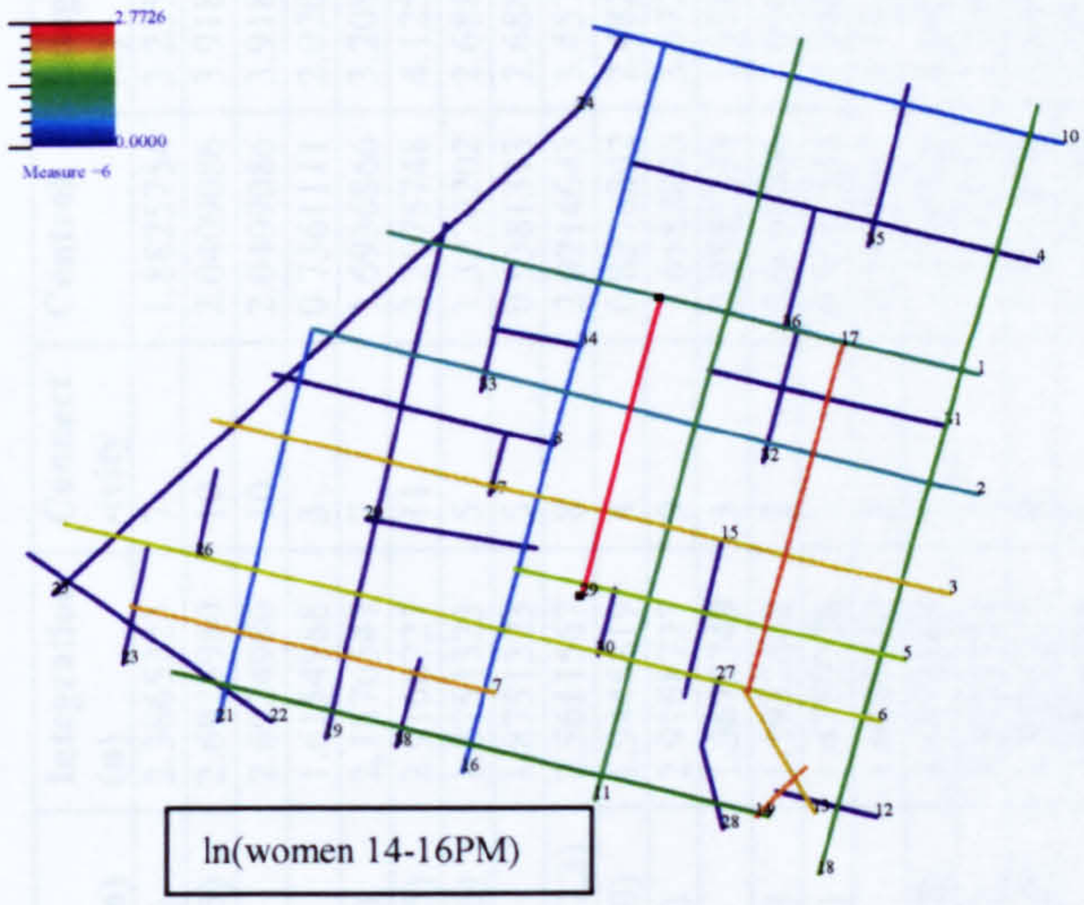
Table 5A-8: List of gate numbers with values of integration-n and -3, connectivity, control, depth and ln (moving women) per minute in Hsimenting
{Note: Obs (women)/min: total number of moving women per minute; the numbers in the bracket are gate numbers assigned for observation.}











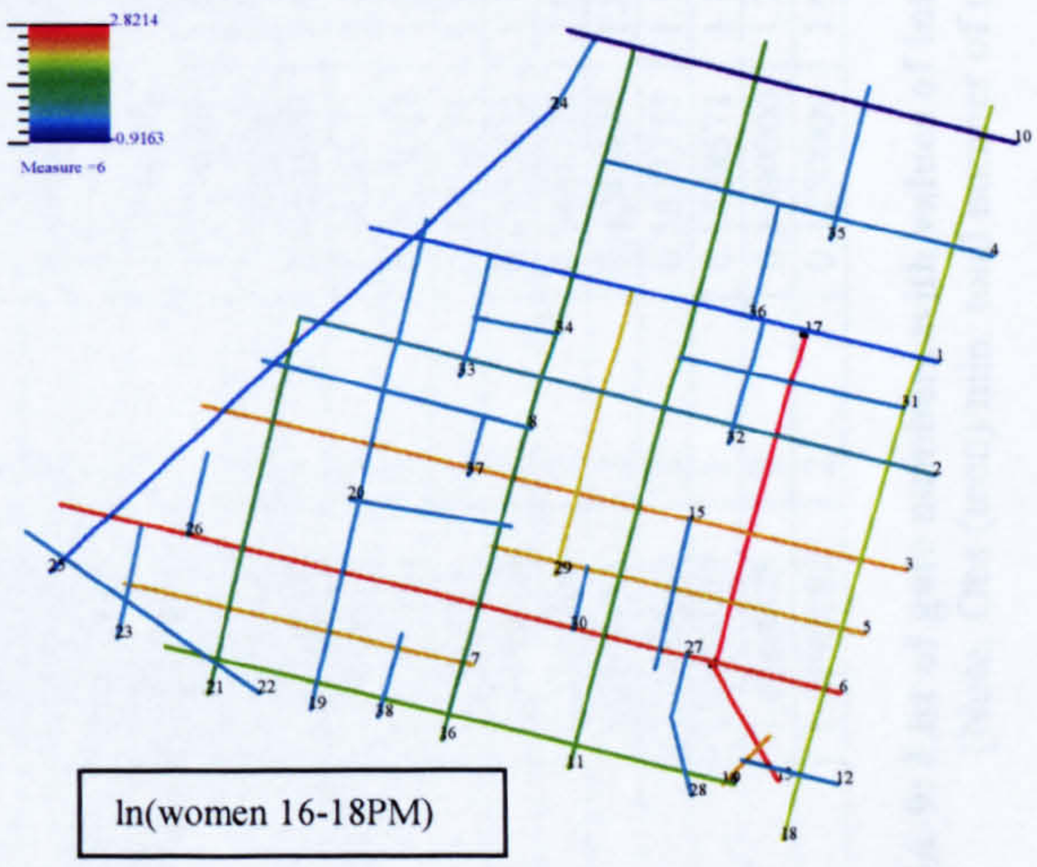
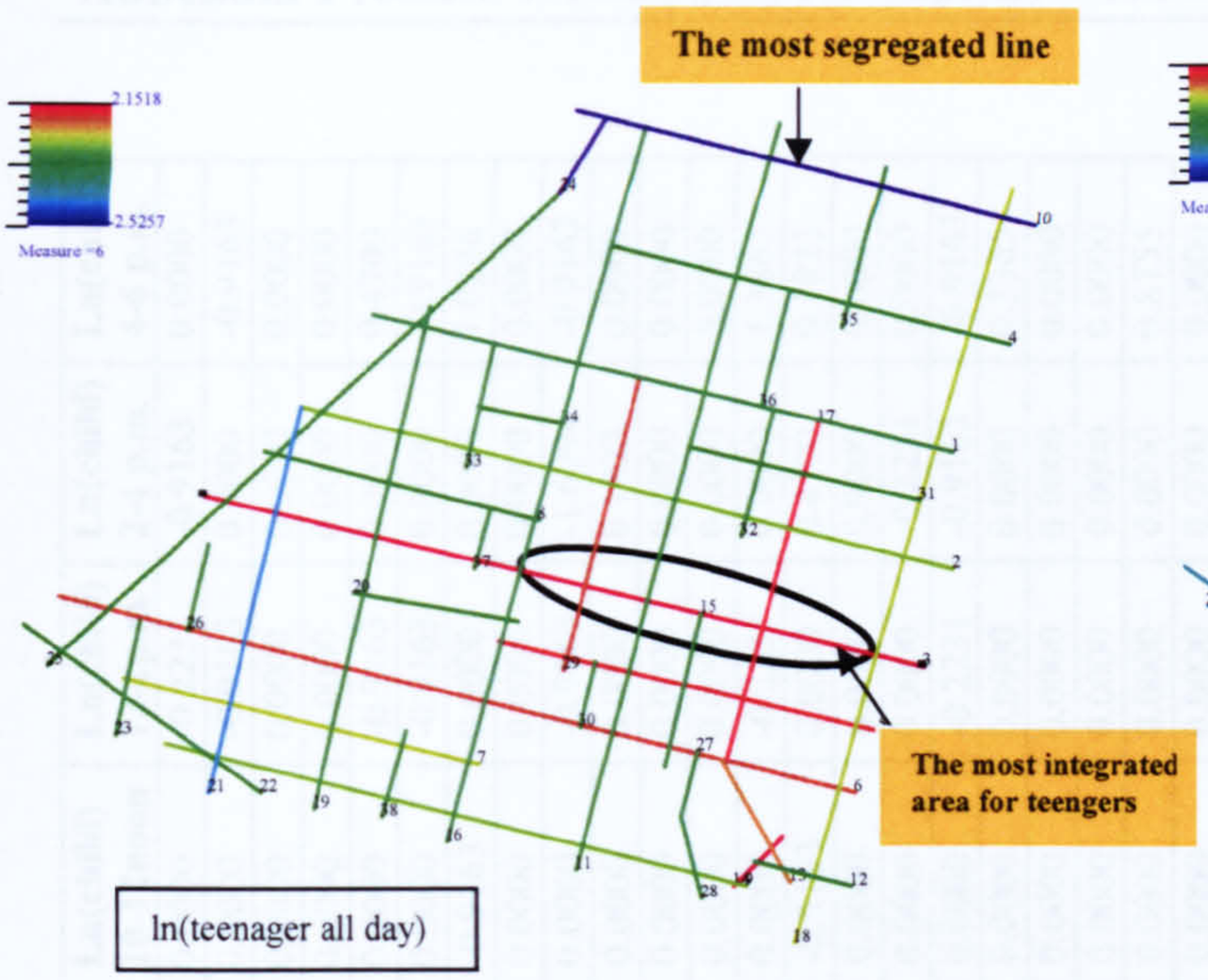


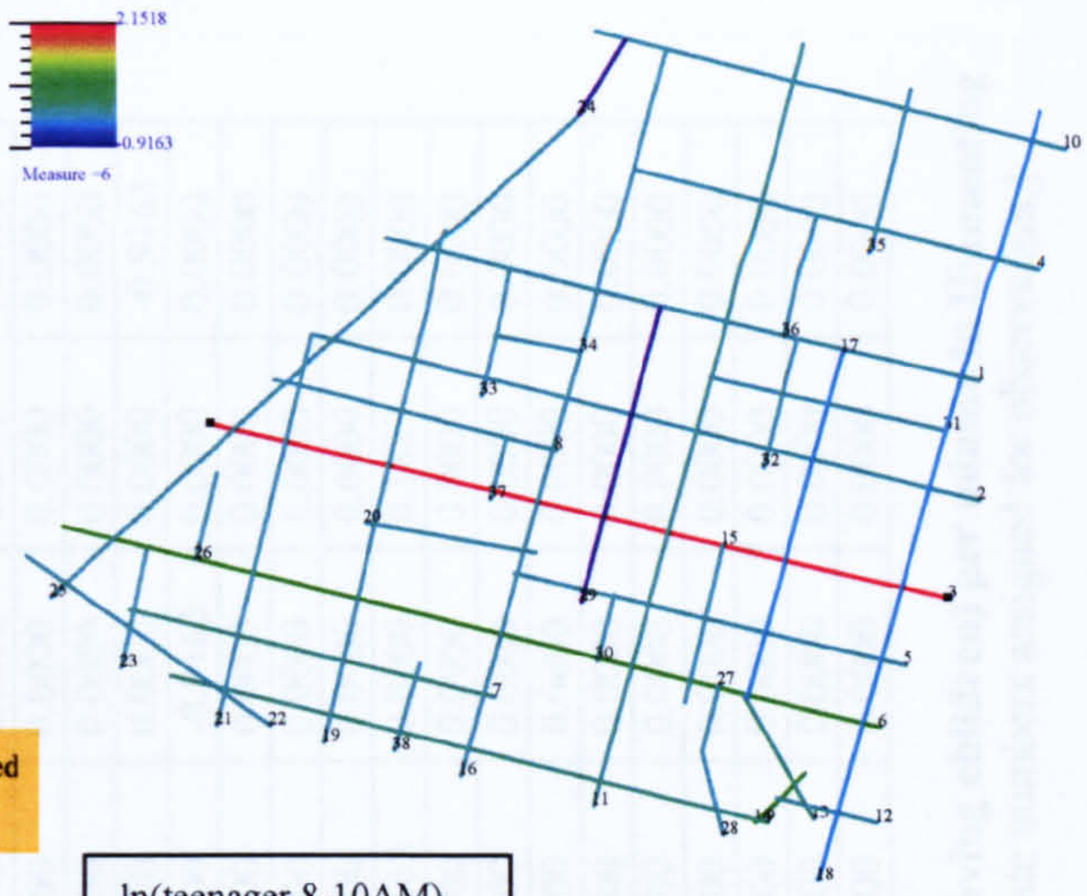
Figure 5A-10: The axial analysis of moving women at different periods from 8:00 am to 18:00 pm in Hsimen quarter

Index# (gate no)	Integration (n)	Connect -ivity	Control	Integration (3)	Depth	Obs(teen) /Min - All	Ln(teen) /Min- All	Ln(teen) 8-10a.m.	Ln(teen) 10-12noon	Ln(teen) 12-2p.m.	Ln(teen) 2-4 p.m.	Ln(teen) 4-6 p.m.
1 (8)	2.3865323	7	1.8825754	3.2358046	2	0.7200	-0.3285	0.0000	0.0000	0.0000	-0.2231	1.0296
2 (13)	2.6924980	10	2.0409086	3.9189196	2	1.8400	0.6098	0.0000	0.0000	0.8755	0.1823	1.7228
3	2.6924980	10	2.0409086	3.9189196	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1.6154988	3	0.7361111	2.0206244	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5 (6)	2.1876547	7	1.6936866	3.2085962	2	6.4000	1.8563	0.0000	1.0296	1.0296	2.6672	2.4849
6 (15)	2.9168727	11	3.2075748	4.1259847	2	5.4400	1.6938	0.6931	0.0000	1.0296	2.6672	2.4849
7 (16)	1.8751323	5	1.3270202	2.6888587	2	2.4000	0.8755	0.1823	0.0000	0.6931	1.1632	1.7228
8	1.8751323	5	0.9381313	2.6888587	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9 (17,3)	2.5611567	8	2.0214643	3.4578705	2	1.7600	0.5653	0.1823	0.1823	-0.5108	0.5878	1.3863
10 (10)	1.9445819	4	0.8270202	2.4820232	2	0.0800	-2.5257	0.0000	0.0000	0.0000	0.0000	-0.9163
11 (7)	2.9168727	9	1.6182896	3.6726539	3	1.1200	0.1133	0.1823	-0.2231	0.4700	-0.9163	0.4700
12	1.5672749	3	0.9583333	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13 (4)	1.1932662	2	0.6666666	1.0560313	4	8.7200	2.1656	0.1823	1.1632	1.6487	2.8449	2.8214
14 (2)	1.4789778	3	0.9583333	1.9586495	3	4.1600	1.4255	0.6931	0.6931	-0.2231	2.3026	2.1748
15	1.6407410	3	0.3337662	2.1966808	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16 (12)	3.3873363	11	2.3516228	4.0459433	1	0.8000	-0.2231	0.0000	0.0000	0.1823	0.4700	0.1823
17 (5)	1.8751323	5	0.7670994	2.7493186	3	7.2000	1.9741	-0.2231	0.4700	1.2809	2.8679	2.5177
18 (1,9)	2.5001767	8	1.4932896	3.4651763	3	2.3600	0.8587	-0.2231	0.9555	-1.6094	1.4351	1.3863
19	2.8380384	9	1.5698769	3.6726539	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1.6667843	2	0.2020202	1.8919226	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21 (18)	2.6251855	8	1.1770200	3.4745131	3	0.2400	-1.4271	0.0000	-0.2231	0.0000	0.0000	-0.9163
22	1.9445819	4	0.8611111	2.4820232	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	1.3125927	2	0.4500000	1.4784206	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24 (11)	1.3637327	1	0.1111111	1.3750452	4	0.0800	-2.5257	-0.9163	0.0000	0.0000	0.0000	0.0000
25 (19)	2.5611567	9	2.1198769	3.6690104	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	1.4584364	1	0.0909091	1.5669198	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	1.5672749	2	0.5909091	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	1.5218468	2	0.6250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29 (14)	1.6154988	3	0.3428571	2.1966808	3	5.4400	1.6938	-0.9163	0.4700	2.1282	2.1282	2.1282
30	1.5442268	2	0.2337662	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	1.5442268	3	0.8111111	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	1.4384578	2	0.4333333	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	1.5218468	3	0.7428571	2.0811150	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	1.6154988	2	0.4242424	1.8185619	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	1.1932662	2	0.5833333	1.1634564	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	1.3125927	1	0.1428571	1.1493285	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	1.4384578	2	0.3000000	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	1.4190192	2	0.3250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

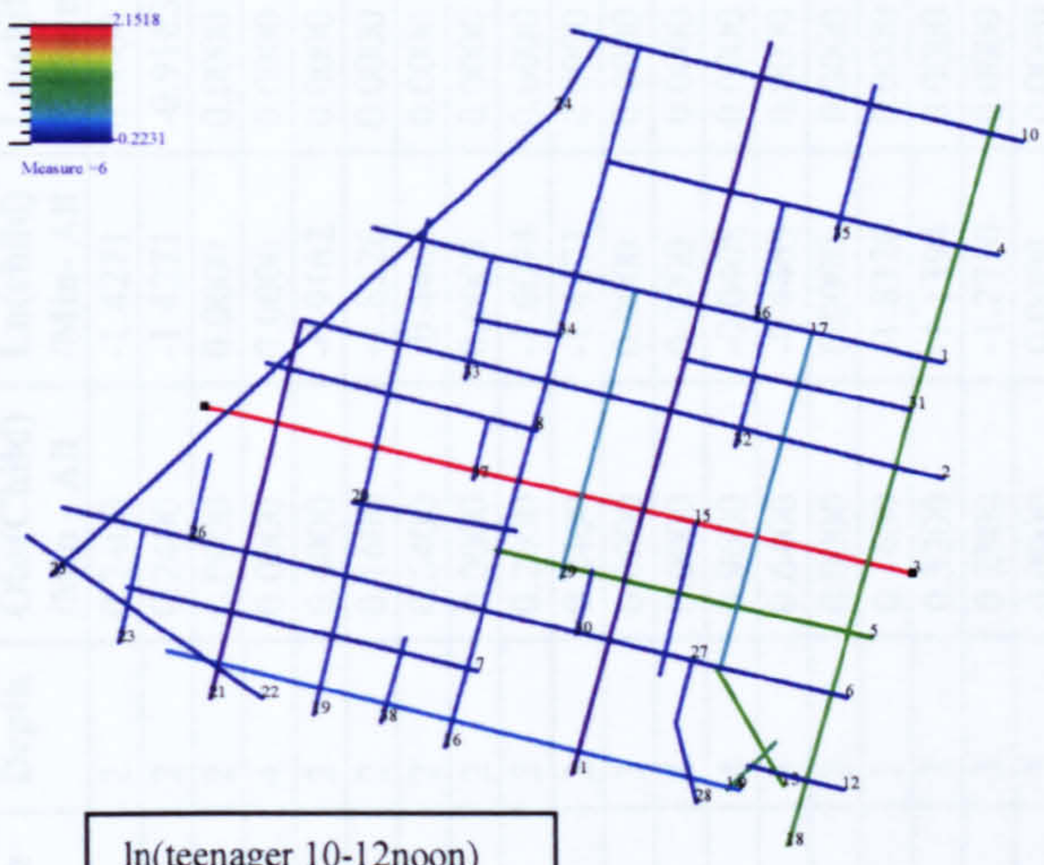
Table 5A-9: List of gate numbers with values of integration-n and -3, connectivity, control, depth and ln (moving teen) per minute in Hsimenting
{Note: Obs (teen)/min: total number of moving teen per minute; the numbers in the bracket are gate numbers assigned for observation.}



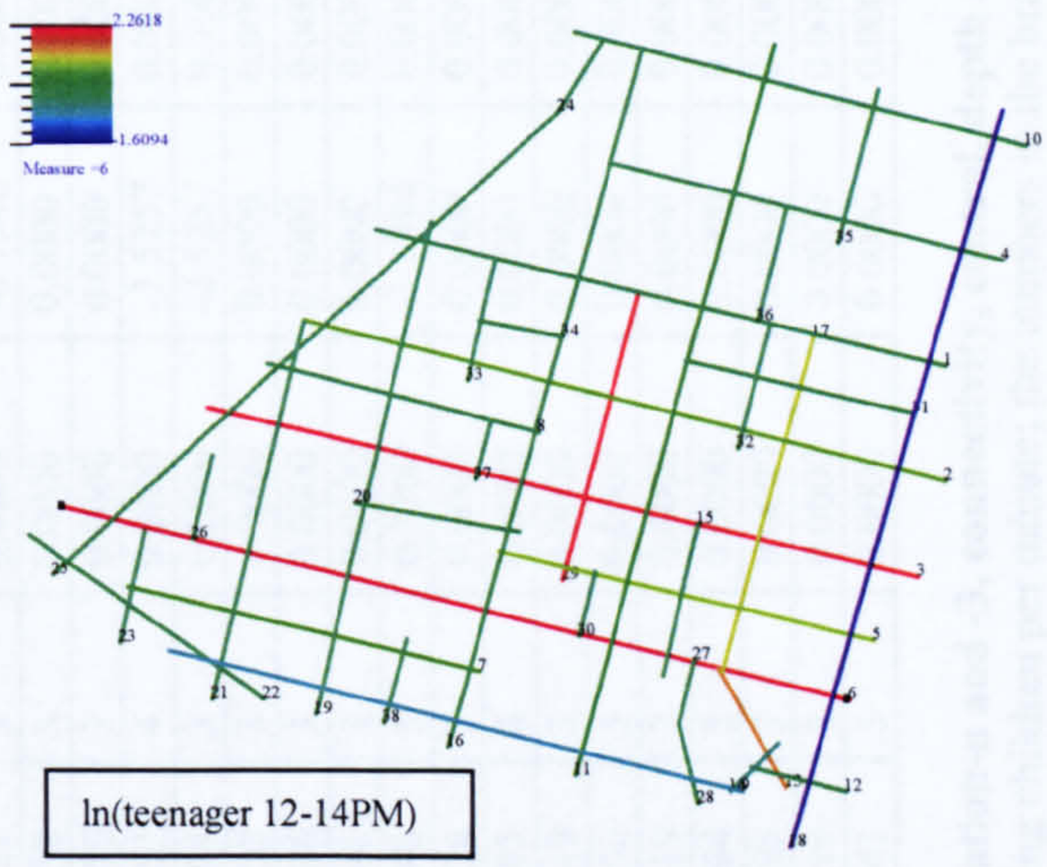
ln(teenager all day)



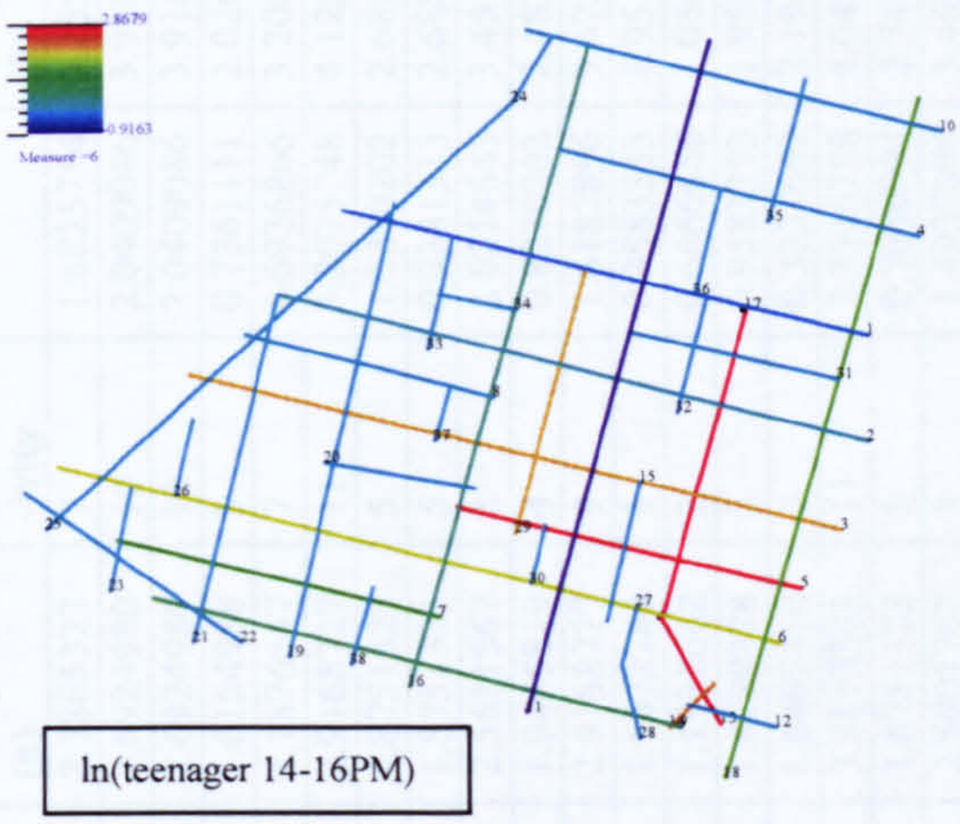
ln(teenager 8-10AM)



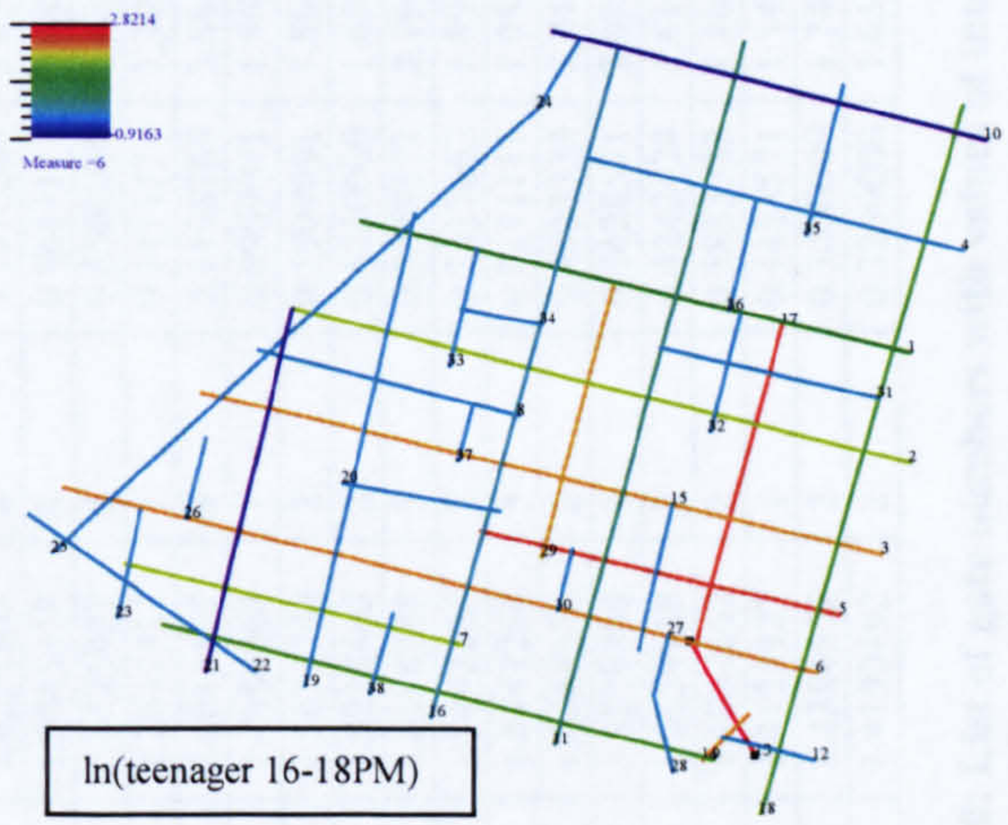
ln(teenager 10-12noon)



ln(teenager 12-14PM)



ln(teenager 14-16PM)

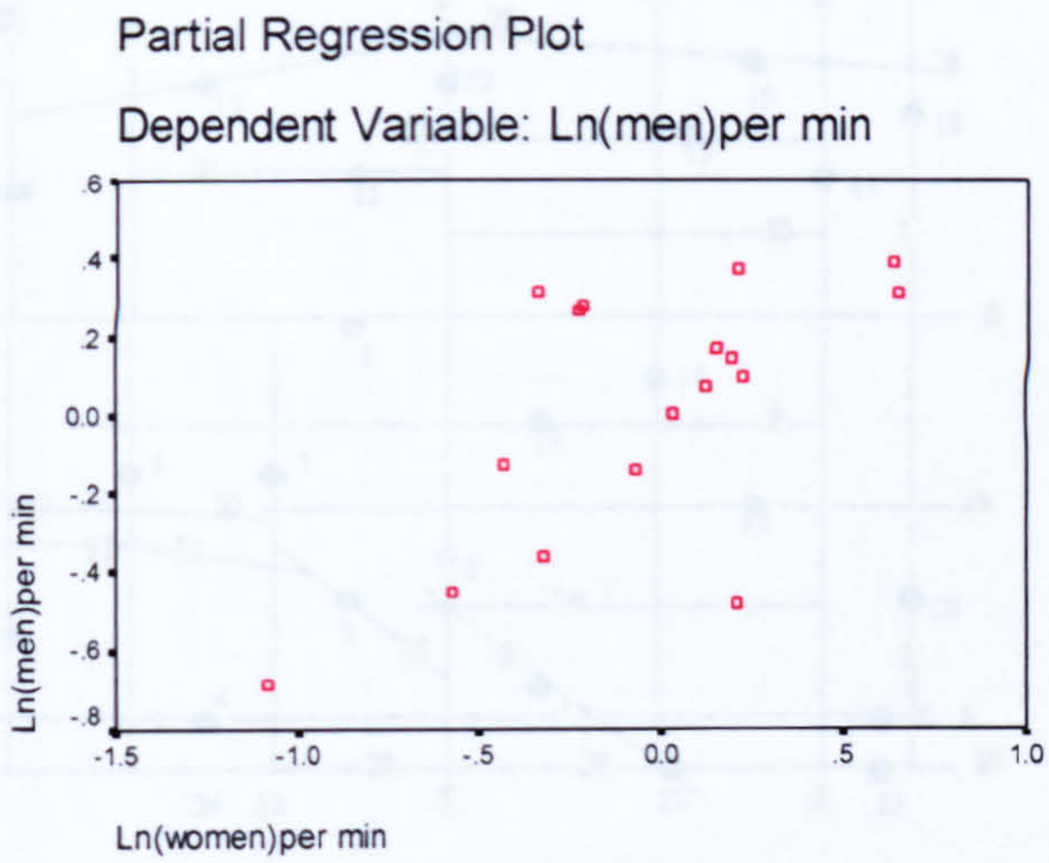


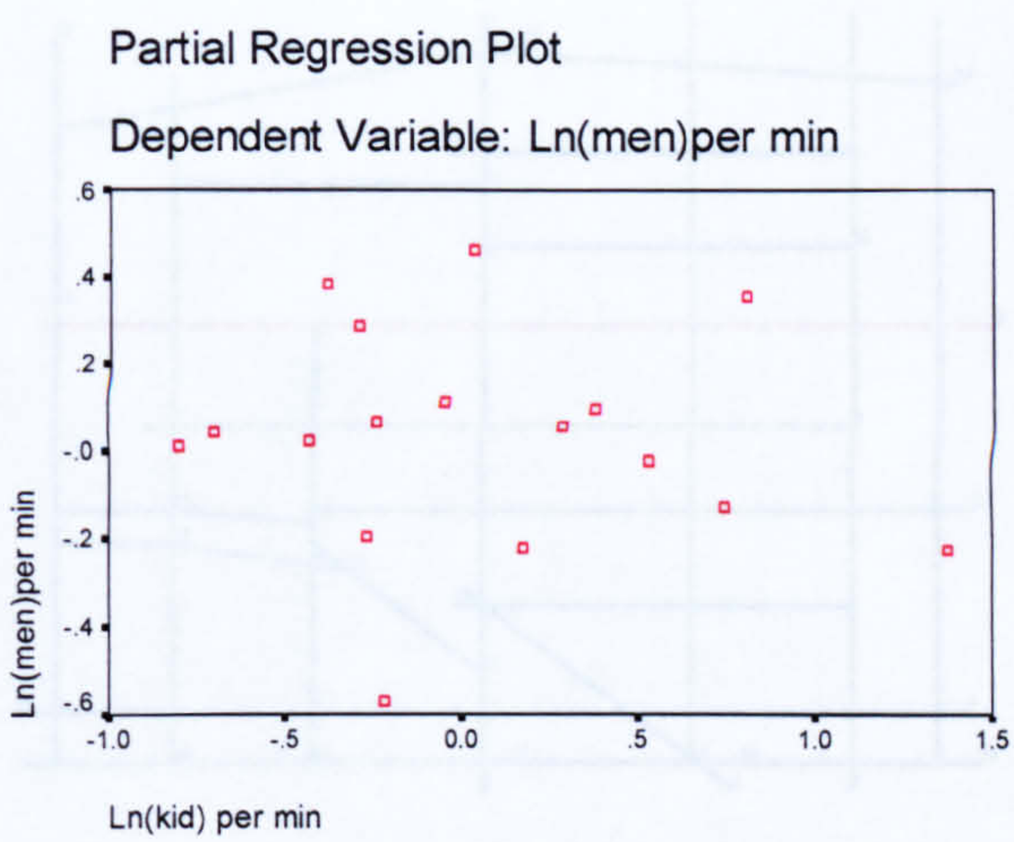
ln(teenager 16-18PM)

Figure 5A-11: The axial analyses of moving teenagers at different periods from 8:00am to 18:00 pm in Hsimen quarter

Index# (gate no)	Integration (n)	Connect -ivity	Control	Integration (3)	Depth	Obs(Child) /Min - All	Ln(child) /Min- All	Ln(child) 8-10a.m.	Ln(child) 10-12noon	Ln(child) 12-2p.m.	Ln(child) 2-4 p.m.	Ln(child) 4-6 p.m.
1 (8)	2.3865323	7	1.8825754	3.2358046	2	0.2400	-1.4271	0.0000	0.0000	-0.2231	-0.9163	0.0000
2 (13)	2.6924980	10	2.0409086	3.9189196	2	0.2400	-1.4271	-0.9163	0.0000	-0.9163	0.0000	-0.9163
3	2.6924980	10	2.0409086	3.9189196	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1.6154988	3	0.7361111	2.0206244	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5 (6)	2.1876547	7	1.6936866	3.2085962	2	0.4000	-0.9162	0.0000	0.0000	-0.9163	0.0000	0.4700
6 (15)	2.9168727	11	3.2075748	4.1259847	2	0.1600	-1.8326	0.0000	0.0000	-0.9163	0.0000	-0.9163
7 (16)	1.8751323	5	1.3270202	2.6888587	2	0.6400	-0.4463	0.0000	-0.9163	0.0000	0.0000	1.0296
8	1.8751323	5	0.9381313	2.6888587	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9 (17,3)	2.5611567	8	2.0214643	3.4578705	2	0.2000	-1.6094	0.0000	0.0000	-0.9163	-1.6094	-0.9163
10 (10)	1.9445819	4	0.8270202	2.4820232	2	0.2400	-1.4271	0.0000	0.0000	0.0000	0.1823	0.0000
11 (7)	2.9168727	9	1.6182896	3.6726539	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	1.5672749	3	0.9583333	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13 (4)	1.1932662	2	0.6666666	1.0560313	4	0.9600	-0.0408	0.0000	0.0000	-0.2231	0.0000	1.3863
14 (2)	1.4789778	3	0.9583333	1.9586495	3	0.6400	-0.4463	0.0000	-0.9163	0.0000	0.4700	0.1823
15	1.6407410	3	0.3337662	2.1966808	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16 (12)	3.3873363	11	2.3516228	4.0459433	1	0.1600	-1.8326	0.0000	0.0000	0.0000	-0.2231	0.0000
17 (5)	1.8751323	5	0.7670994	2.7493186	3	0.3200	-1.1394	0.0000	0.0000	-0.2231	-0.9163	-0.9163
18 (1,9)	2.5001767	8	1.4932896	3.4651763	3	0.2800	-1.2730	0.0000	0.0000	0.0000	0.0000	0.3365
19	2.8380384	9	1.5698769	3.6726539	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1.6667843	2	0.2020202	1.8919226	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21 (18)	2.6251855	8	1.1770200	3.4745131	3	0.4800	-0.7340	0.0000	0.0000	0.0000	0.0000	0.8755
22	1.9445819	4	0.8611111	2.4820232	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	1.3125927	2	0.4500000	1.4784206	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24 (11)	1.3637327	1	0.1111111	1.3750452	4	0.0800	-2.5257	0.0000	0.0000	0.0000	0.0000	-0.9163
25 (19)	2.5611567	9	2.1198769	3.6690104	3	0.0800	-2.5257	0.0000	0.0000	-0.9163	0.0000	0.0000
26	1.4584364	1	0.0909091	1.5669198	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	1.5672749	2	0.5909091	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	1.5218468	2	0.6250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29 (14)	1.6154988	3	0.3428571	2.1966808	3	0.3200	-1.1394	0.0000	-0.9163	0.0000	0.1823	0.0000
30	1.5442268	2	0.2337662	1.8919226	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	1.5442268	3	0.8111111	1.9586495	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	1.4384578	2	0.4333333	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	1.5218468	3	0.7428571	2.0811150	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	1.6154988	2	0.4242424	1.8185619	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	1.1932662	2	0.5833333	1.1634564	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	1.3125927	1	0.1428571	1.1493285	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	1.4384578	2	0.3000000	1.7410219	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	1.4190192	2	0.3250000	1.6588341	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 5A-10: List of gate numbers with values of integration-n and -3, connectivity, control, depth and ln (moving children) per minute in Hsimenting
{Note: Obs (child)/min: total number of moving children per minute; the numbers in the bracket are gate numbers assigned for observation.}





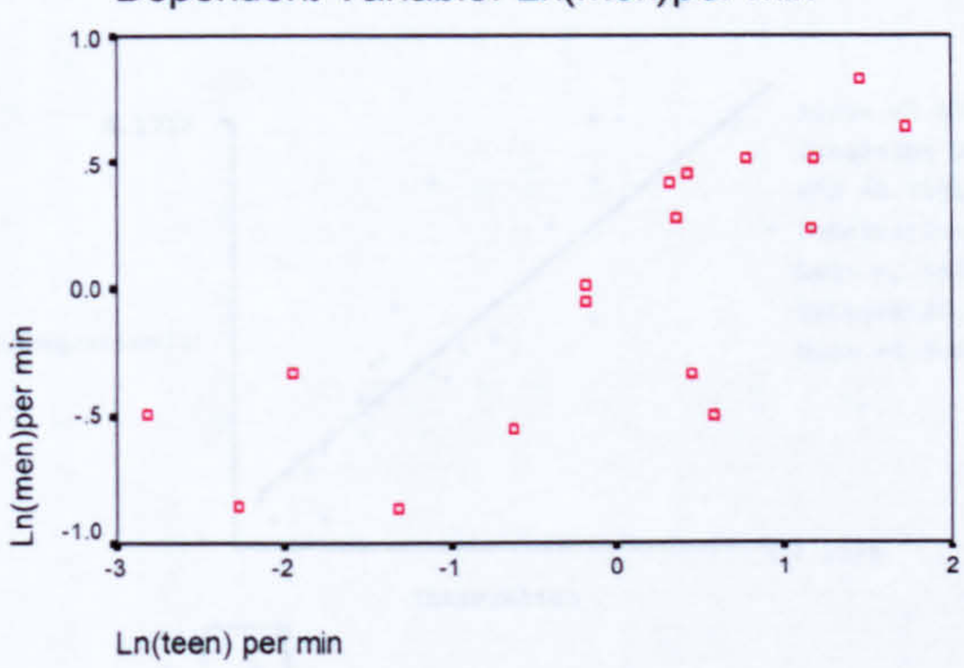


Figure 5A-12: Scattergrams of correlation between men and women, teenagers and children

		Ln(men)per min	Ln(women)per min	Ln(teen) per min	Ln(children) per min
Pearson Correlation	Ln(men)per min	1.000	.869	.803	.465
	Ln(women)per min	.869	1.000	.827	.577
	Ln(teen) per min	.803	.827	1.000	.407
	Ln(children) per min	.465	.577	.407	1.000

Table 5A-11: The Pearson correlation among men, women, teenagers, and children

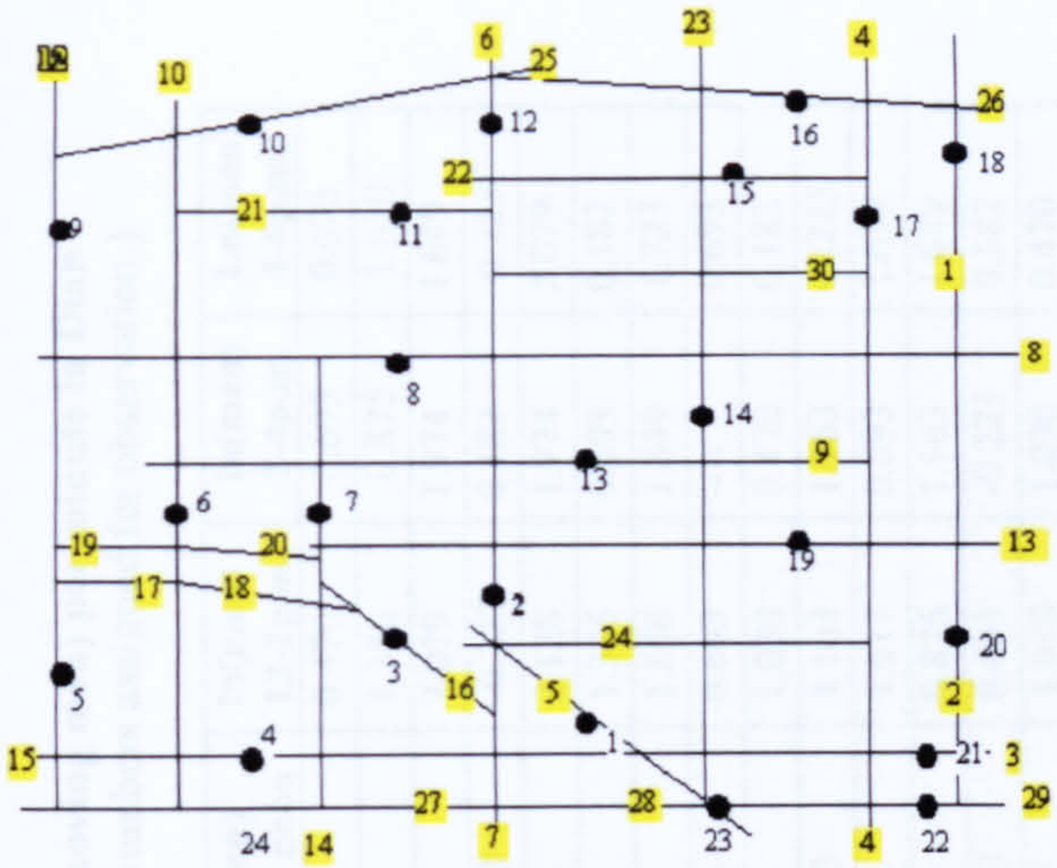


Figure 6A-1: Gate numbers of observation in Dinghou area

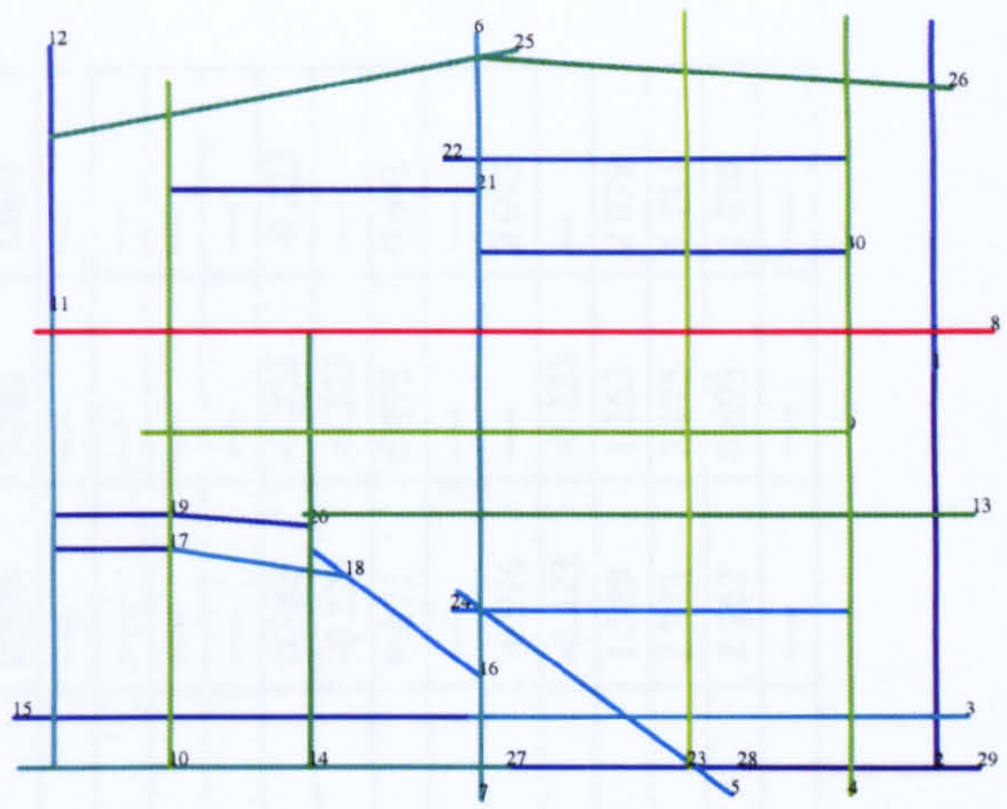
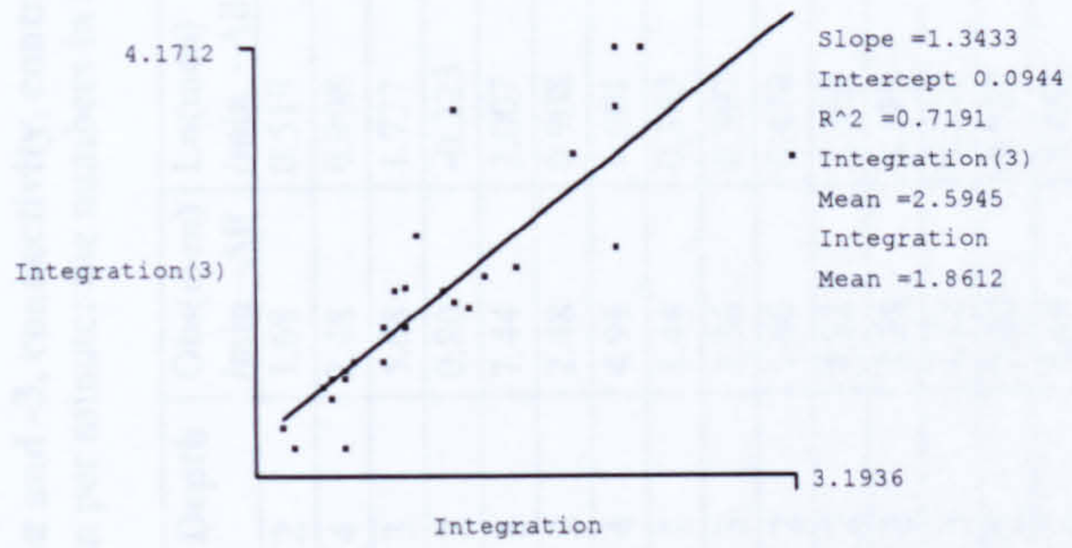
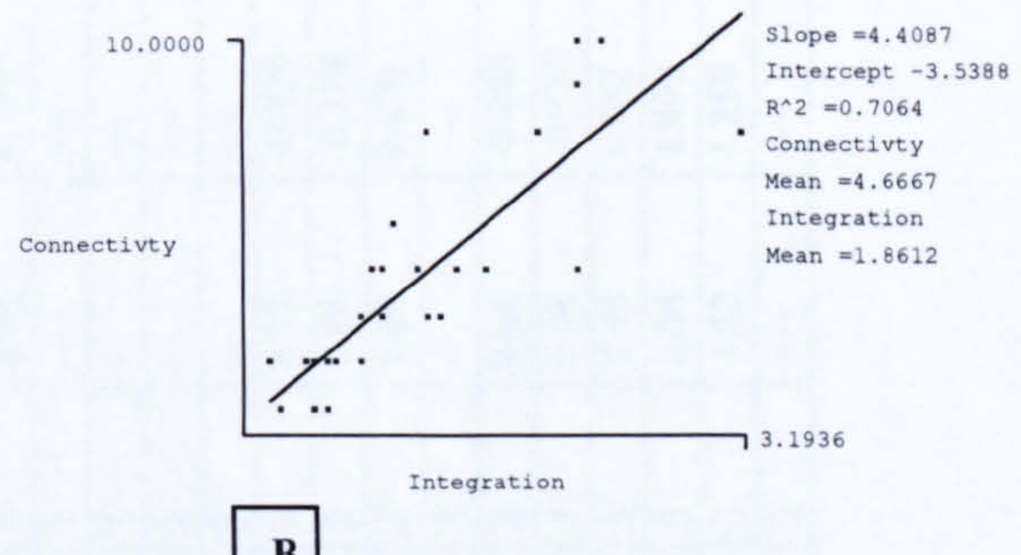
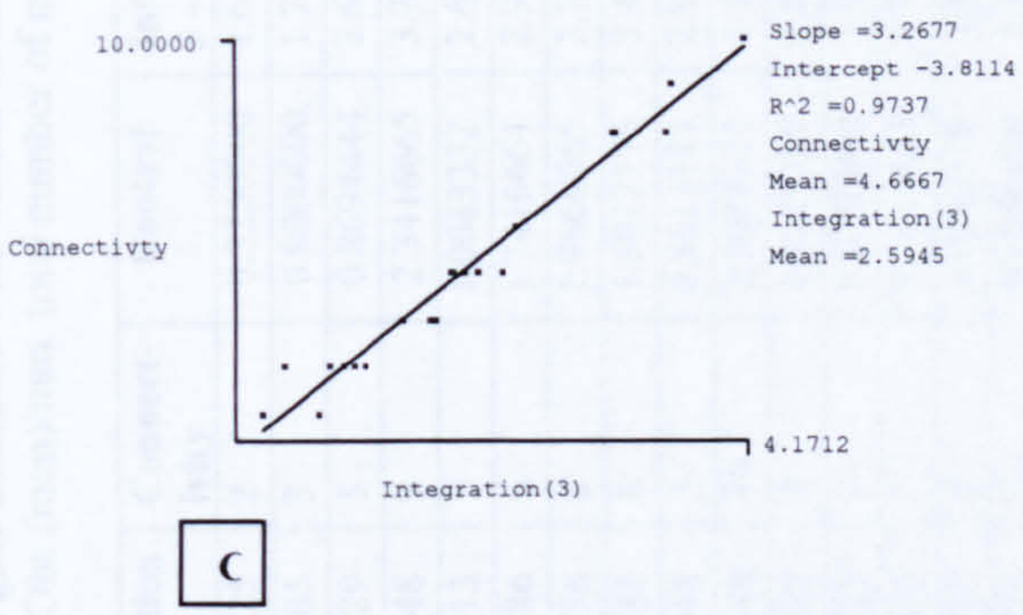


Figure 6A-2: A globally spatial analysis of Dinghou area (Note: The red line represents the most integrated line in the study area.)







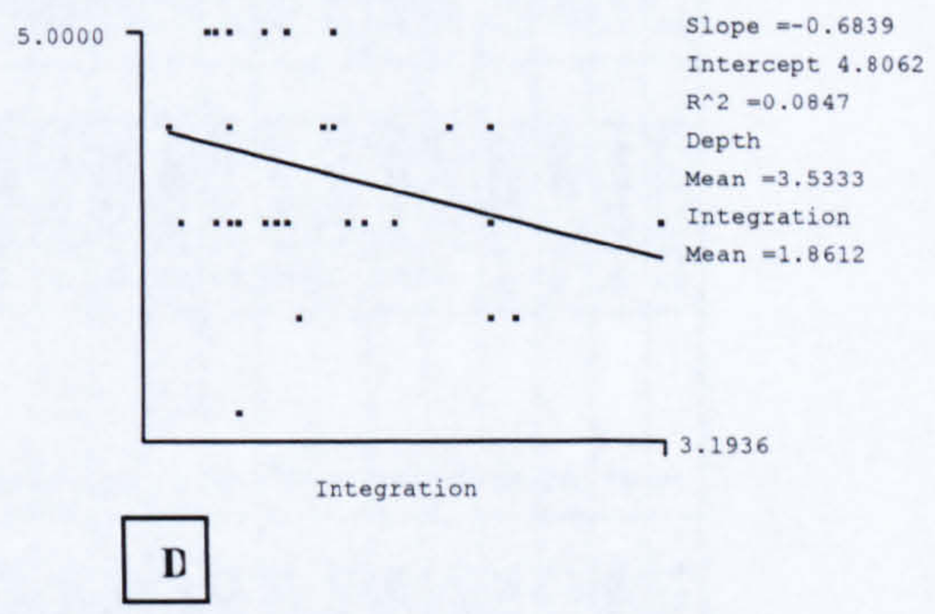


Figure 6A-3: Scattergrams (A-D) of the correlation between syntactic properties of Dinghou area

Table 6A-1: List of gate numbers with values of integration-n and -3, connectivity, control, depth and Ln (moving men) per minute in Dian
{Note: Obs (men)/min: total number of moving men per minute; the numbers in the bracket are gate numbers assigned for observation.}

Index# (gate no.)	Integration (global)	Connect-ivity	Control	Integration 3 – (local)	Depth	Obs(men) /min –All	Ln(men) /min –All	Ln(men) 8-10a.m.	Ln(men) 10-12 noon	ln(men) 12-2p.m.	ln(men) 2-4p.m.	Ln(men) 4-6p.m.
1 (18)	1.5302725	2	0.3250000	1.6588341	2	1.68	0.519	0.470	0.182	0.470	0.693	0.693
2 (20)	1.2886505	3	0.9000000	1.7741046	4	2.48	0.908	0.182	0.693	1.386	0.875	1.030
3 (21)	1.7488829	5	0.8694444	2.6610227	3	5.68	1.737	1.482	1.281	2.079	1.974	1.649
4 (17)	2.5328648	9	2.3416665	3.7919776	2	0.80	-0.223	-0.916	-0.223	-0.223	0.182	-0.223
5 (1)	1.7082113	5	1.0083332	2.6360171	3	7.44	2.007	1.974	1.856	2.128	1.974	2.079
6 (12)	1.7915386	6	1.7416664	2.9730210	2	2.48	0.908	1.163	0.693	1.386	0.693	0.182
7 (2)	1.9329756	8	1.9666665	3.7657380	4	4.96	1.601	0.693	1.723	1.856	1.649	1.723
8 (8)	3.1936121	8	1.8027775	3.4745131	1	1.44	0.365	-0.916	1.030	0.693	----	0.693
9 (13)	2.5328648	5	0.5611111	2.9078753	3	1.36	0.307	0.182	---	1.030	0.470	0.182
10 (6)	2.5328648	10	2.9083331	4.1711750	2	1.60	0.470	---	-0.223	1.163	1.163	-0.223
11 (5)	1.8834122	5	1.3749999	2.6360171	2	4.32	1.463	1.281	1.386	1.917	0.693	1.649
12 (9)	1.5302725	2	0.3750000	1.6588341	2	3.28	1.188	1.163	0.875	0.875	1.163	1.649
13 (19)	2.1603847	5	0.7944444	2.7807834	3	1.12	0.113	-0.223	-0.223	0.693	-0.223	0.182
14 (7)	2.3694544	8	2.0249999	3.4991326	2	2.08	0.732	-0.916	1.030	1.030	1.030	0.470
15 (4)	1.5302725	3	0.4250000	2.1398363	3	4.40	1.482	0.875	1.163	1.792	1.856	1.386
16 (3)	1.6693881	3	0.5000000	2.1966808	3	2.16	0.770	0	0.470	0.875	1.386	1.030
17	1.4690615	3	0.5500000	2.0811150	3	---	----	----	----	----	----	----
18	1.7488829	4	0.8916666	2.3963788	3	---	----	----	----	-----	----	----
19	1.4402565	3	0.6333333	2.0206244	3	---	----	----	----	----	----	----
20	1.5302725	3	0.5583333	2.1398363	3	---	----	----	----	----	----	----
21 (11)	1.4690615	2	0.2666667	1.9615167	3	0.72	-0.329	-0.916	-0.916	0.182	-0.223	-0.223
22 (15)	1.5628314	3	0.3777778	2.1966808	3	0.88	-0.128	0.182	0.470	-0.223	-0.223	----
23 (14)	2.6233244	10	2.3749995	4.1711750	2	1.60	0.470	-0.223	-0.916	0.875	0.875	0.693
24	1.6693881	4	0.5361111	2.3963788	3	---	----	----	---	----	----	----
25 (10)	1.9852184	4	0.9666666	2.5243387	3	0.64	-0.446	----	-0.223	-0.916	----	0.693
26 (16)	2.0403636	5	1.1277777	2.7185187	3	0.48	-0.734	-0.223	----	-0.223	-0.223	---
27 (24)	1.9329756	4	0.5500000	2.5660310	3	4.40	1.482	1.163	1.030	1.569	1.163	2.079
28 (23)	1.5302725	3	0.4250000	2.0811150	3	6.64	1.893	0.875	0.875	2.773	2.175	1.281
29 (22)	1.3355106	2	0.4444444	1.6588341	3	3.52	1.258	-0.223	0.875	2.262	0.693	1.030
30	1.5628314	3	0.3777778	2.1966808	3	----	----	-----	----	----	----	----

Table 6A.2: List of gate numbers with values of integration-n and -3, connectivity, control, depth and Ln (moving women) per minute in Dian
{Note: Obs (women)/min: total number of moving women per minute; the numbers in the bracket are gate numbers assigned for observation.}

Index# (gate no.)	Integration (global)	Connect-ivity	Control	Integration (3) - (local)	Depth	Obs (Women) /min –All	Ln (Women) /min –All	Ln (Women) 8-10a.m.	Ln(Women) 10-12 noon	Ln (Women) 12-2p.m.	Ln (Women) 2-4p.m.	Ln (Women) 4-6p.m.
1 (18)	1.5302725	2	0.3250000	1.6588341	2	2.40	0.875	-0.223	1.030	1.386	0.693	0.875
2 (20)	1.2886505	3	0.9000000	1.7741046	4	3.92	1.366	1.030	1.281	1.917	1.163	1.163
3 (21)	1.7488829	5	0.8694444	2.6610227	3	13.36	2.592	1.649	1.856	3.091	2.580	2.996
4 (17)	2.5328648	9	2.3416665	3.7919776	2	0.88	-0.128	-0.916	-0.916	1.030	-0.916	-0.916
5 (1)	1.7082113	5	1.0083332	2.6360171	3	17.60	2.868	1.856	2.797	3.243	2.934	3.035
6 (12)	1.7915386	6	1.7416664	2.9730210	2	4.64	1.535	1.030	1.569	1.386	1.482	1.974
7 (2)	1.9329756	8	1.9666665	3.7657380	4	10.24	2.326	2.028	1.974	2.721	2.342	2.380
8 (8)	3.1936121	8	1.8027775	3.4745131	1	4.88	1.585	0.470	1.281	1.917	1.281	2.175
9 (13)	2.5328648	5	0.5611111	2.9078753	3	2.72	1.001	-0.916	-0.223	1.649	0.470	1.723
10 (6)	2.5328648	10	2.9083331	4.1711750	2	2.00	0.693	0.693	-0.916	1.163	1.281	-0.223
11 (5)	1.8834122	5	1.3749999	2.6360171	2	5.28	1.664	1.569	2.175	2.610	2.175	1.386
12 (9)	1.5302725	2	0.3750000	1.6588341	2	6.00	1.792	1.163	2.175	1.649	1.482	2.128
13 (19)	2.1603847	5	0.7944444	2.7807834	3	2.16	0.770	0.693	0.875	0.470	1.163	0.470
14 (7)	2.3694544	8	2.0249999	3.4991326	2	8.08	2.089	1.163	1.792	2.153	2.028	2.485
15 (4)	1.5302725	3	0.4250000	2.1398363	3	12.00	2.485	1.649	2.128	2.845	2.485	2.845
16 (3)	1.6693881	3	0.5000000	2.1966808	3	3.36	1.212	0.693	1.281	1.649	1.163	1.030
17	1.4690615	3	0.5500000	2.0811150	3	----	----	----	----	----	----	----
18	1.7488829	4	0.8916666	2.3963788	3	----	----	----	----	-----	----	----
19	1.4402565	3	0.6333333	2.0206244	3	----	----	----	----	----	----	----
20	1.5302725	3	0.5583333	2.1398363	3	----	----	----	----	----	----	----
21 (11)	1.4690615	2	0.2666667	1.9615167	3	1.20	0.182	0.182	0.470	-0.223	-0.223	0.470
22 (15)	1.5628314	3	0.3777778	2.1966808	3	0.08	-2.526	----	----	----	-0.916	----
23 (14)	2.6233244	10	2.3749995	4.1711750	2	2.88	1.058	0.470	0.182	1.856	1.163	0.693
24	1.6693881	4	0.5361111	2.3963788	3	----	----	----	----	----	----	-----
25 (10)	1.9852184	4	0.9666666	2.5243387	3	0.72	-0.329	0.470	-0.916	-0.223	-0.916	-0.916
26 (16)	2.0403636	5	1.1277777	2.7185187	3	0.80	-0.223	-0.916	-0.916	0.693	----	0.182
27 (24)	1.9329756	4	0.5500000	2.5660310	3	9.04	2.202	2.079	1.917	2.262	2.416	2.262
28 (23)	1.5302725	3	0.4250000	2.0811150	3	13.60	2.610	2.079	2.175	3.144	2.518	2.747
29 (22)	1.3355106	2	0.4444444	1.6588341	3	10.40	2.342	1.281	1.974	3.178	2.028	2.262
30	1.5628314	3	0.3777778	2.1966808	3	----	----	-----	----	----	----	----

Table 6A-3: List of gate numbers with values of integration-n and -3, connectivity, control, depth and ln (moving teenager) per minute in Dinghou area

Index# (gateno)	Integration (global)	Connect -ivity	Control	Integration (3) – (local)	Depth	Ln(allteen) /min	Note
1 (18)	1.5302725	2	0.3250000	1.6588341	2	-1.4270000	
2 (20)	1.2886505	3	0.9000000	1.7741046	4	-0.7340000	
3 (21)	1.7488829	5	0.8694444	2.6610227	3	0.9400000	
4 (17)	2.5328648	9	2.3416665	3.7919776	2	-2.5260000	
5 (1)	1.7082113	5	1.0083332	2.6360171	3	1.0580000	The most integrated line for teenager
6 (12)	1.7915386	6	1.7416664	2.9730210	2	-0.5800000	
7 (2)	1.9329756	8	1.9666665	3.7657380	4	0.0400000	
8 (8)	3.1936121	8	1.8027775	3.4745131	1	-0.7340000	
9 (13)	2.5328648	5	0.5611111	2.9078753	3	-1.8329999	
10 (6)	2.5328648	10	2.9083331	4.1711750	2	-2.5260000	
11 (5)	1.8834122	5	1.3749999	2.6360171	2	-0.3290000	
12 (9)	1.5302725	2	0.3750000	1.6588341	2	-0.2230000	
13 (19)	2.1603847	5	0.7944444	2.7807834	3	-0.3290000	
14 (7)	2.3694544	8	2.0249999	3.4991326	2	-0.3290000	
15 (4)	1.5302725	3	0.4250000	2.1398363	3	0.5190000	
16 (3)	1.6693881	3	0.5000000	2.1966808	3	-0.3290000	
17	1.4690615	3	0.5500000	2.0811150	3	0.0000000	
18	1.7488829	4	0.8916666	2.3963788	3	0.0000000	
19	1.4402565	3	0.6333333	2.0206244	3	0.0000000	
20	1.5302725	3	0.5583333	2.1398363	3	0.0000000	
21 (11)	1.4690615	2	0.2666667	1.9615167	3	-1.4270000	
22 (15)	1.5628314	3	0.3777778	2.1966808	3	0.0000000	
23 (14)	2.6233244	10	2.3749995	4.1711750	2	-1.1390001	
24	1.6693881	4	0.5361111	2.3963788	3	0.0000000	
25 (10)	1.9852184	4	0.9666666	2.5243387	3	-1.4270000	
26 (16)	2.0403636	5	1.1277777	2.7185187	3	-2.5260000	
27 (24)	1.9329756	4	0.5500000	2.5660310	3	-0.3280000	
28 (23)	1.5302725	3	0.4250000	2.0811150	3	0.4190000	
29 (22)	1.3355106	2	0.4444444	1.6588341	3	-0.0410000	
30	1.5628314	3	0.3777778	2.1966808	3	0.0000000	

Note: The numbers in the bracket are observational gate numbers

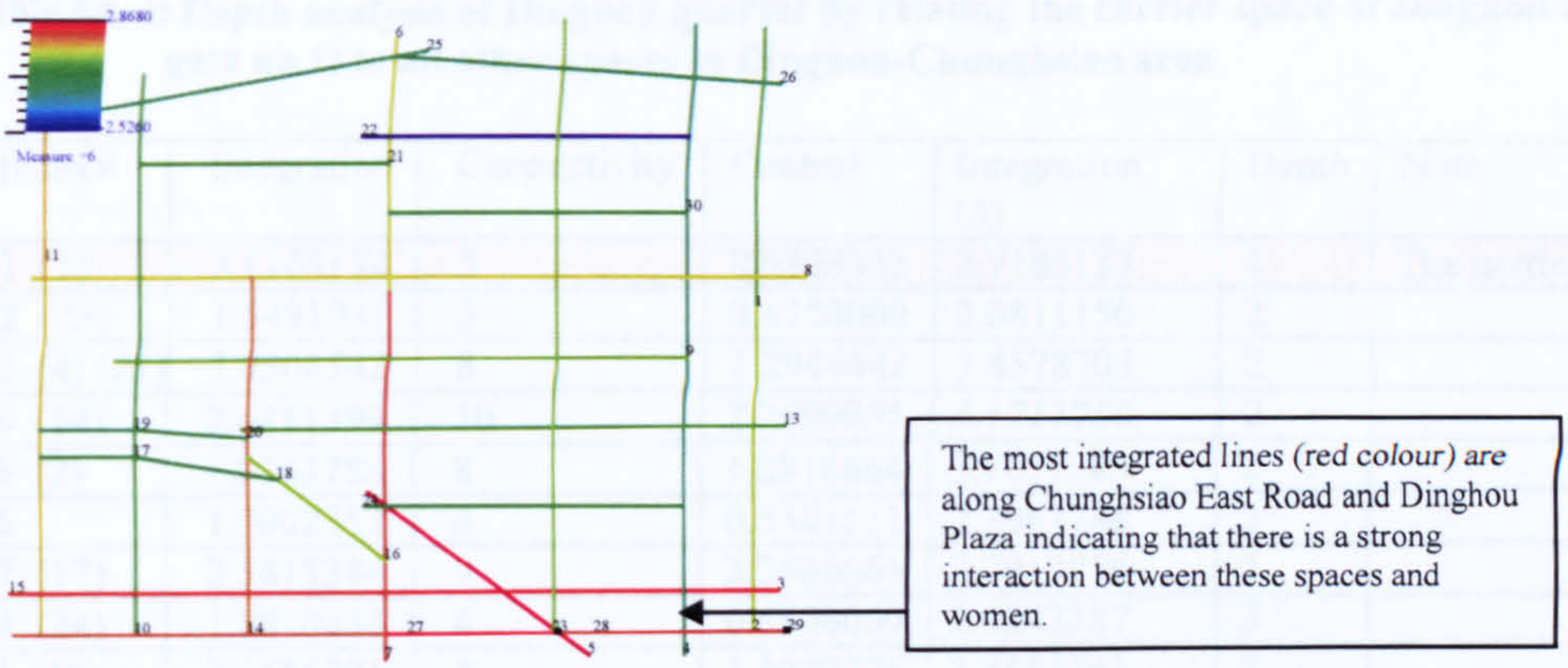


Fig.6A-4: The axial analysis of all moving women/min in Dinghou Area

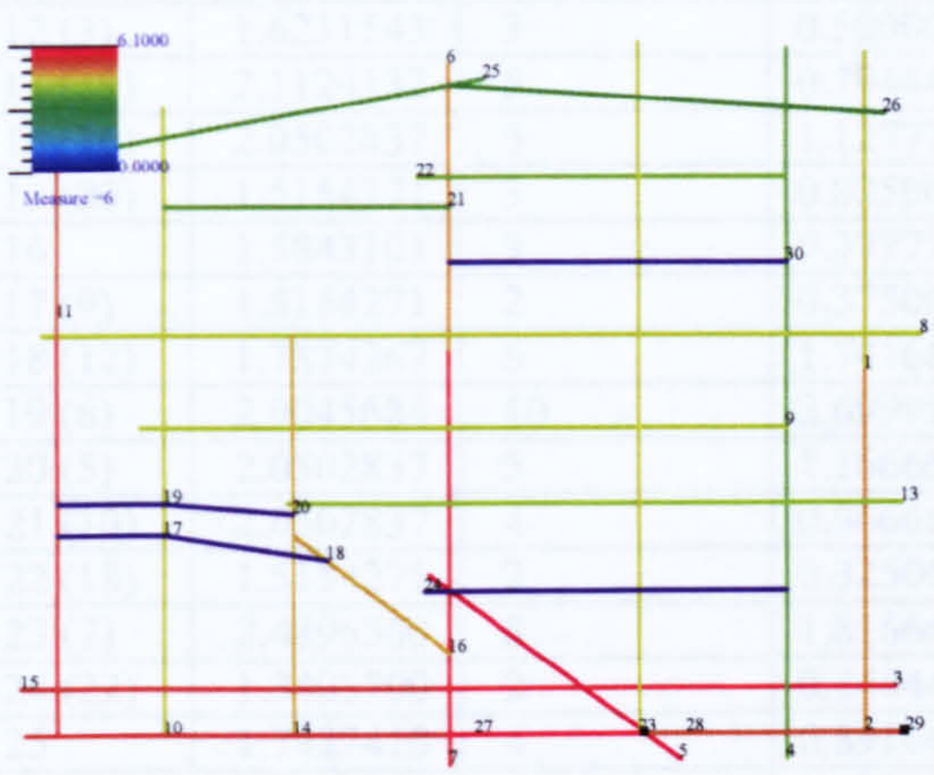


Fig.6A-5: The axial analysis of all moving men/min in Dinghou

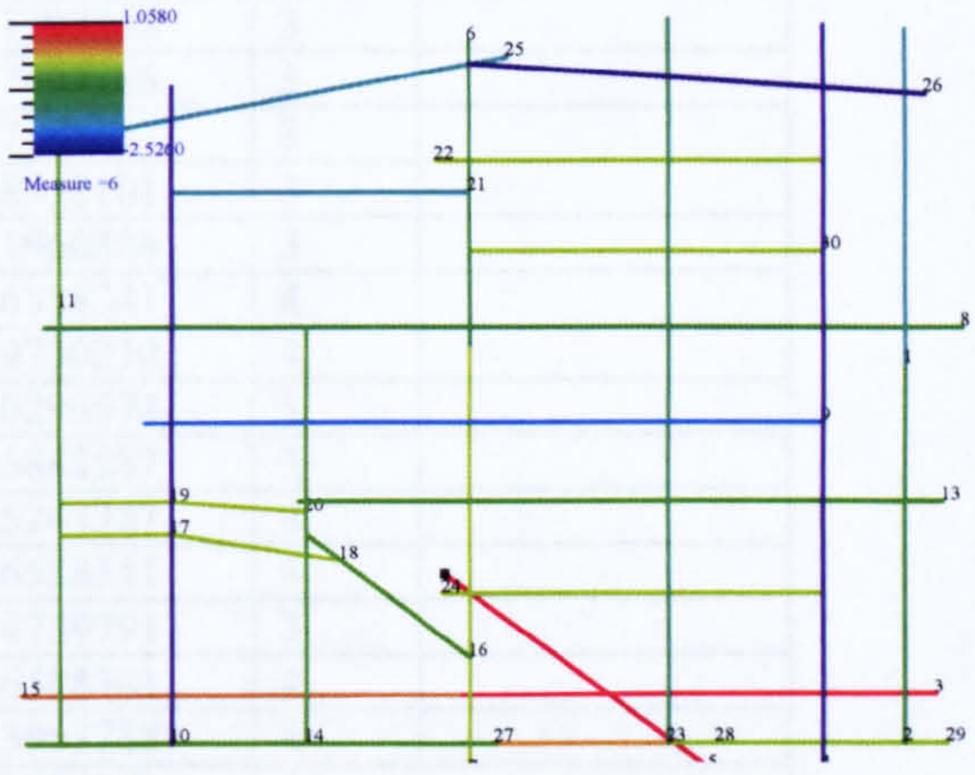


Fig.6A-6: The axial analysis of all moving teenagers/min in Dinghou area

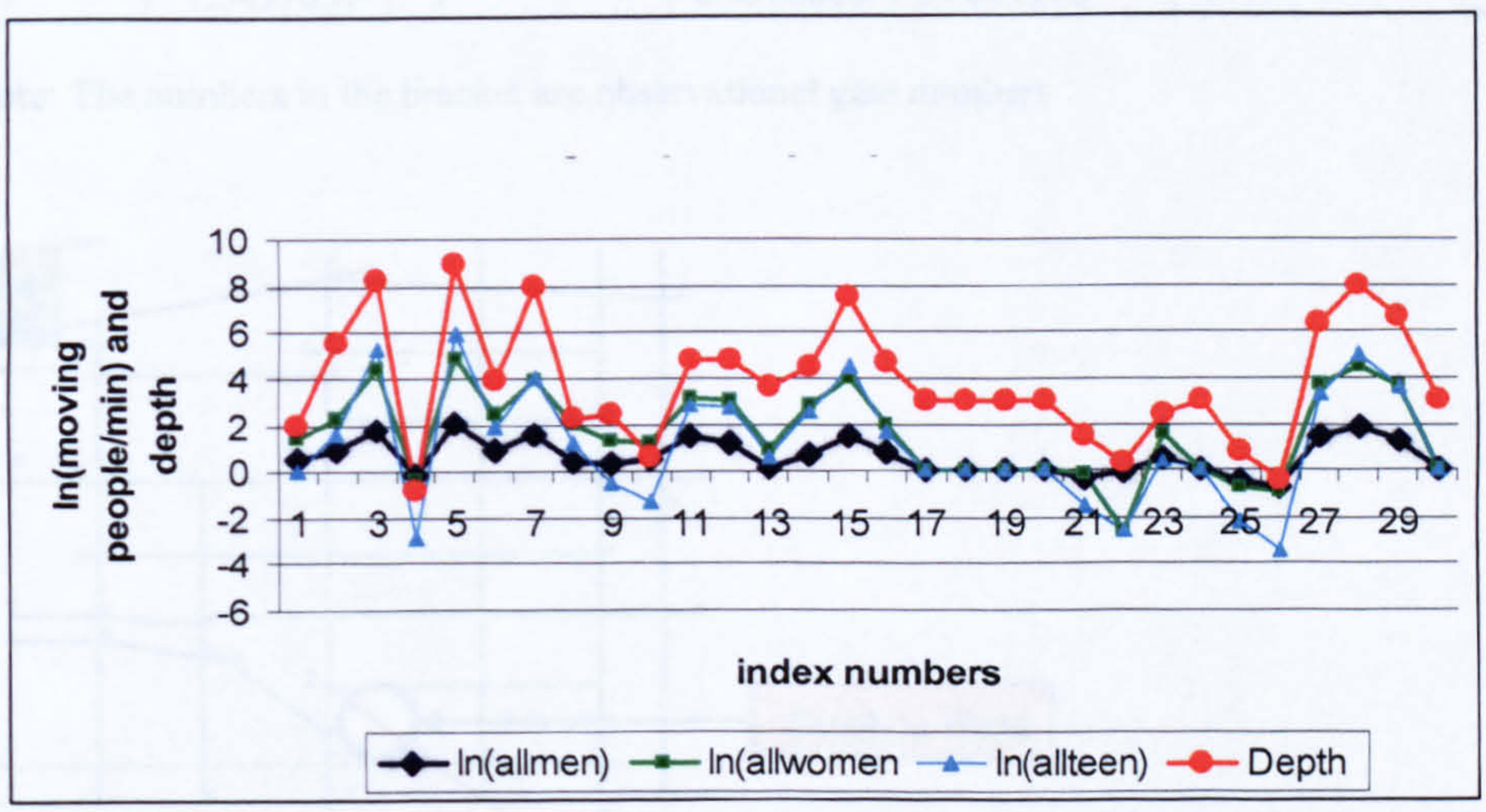


Fig.6A-7: The correlation between depth values and all groups of moving people

Table 6A-4: Depth analysis of Dinghou quarter by relating the carrier space of Dinghou Plaza (at gate no.1) to all other spaces in Dinghou-Chunghsiao area

Index#	Integration	Connectivity	Control	Integration (3)	Depth	Note
1 (1)	2.1124132	5	0.9333333	2.7185187	1	The carrier space
2 (23)	1.5491031	3	0.4250000	2.0811150	2	
3 (4) (21)	3.0308542	8	1.2944442	3.4578705	2	
4 (14)	2.6811399	10	2.2999995	4.1711750	2	
5 (2)	1.9363788	8	1.8916664	3.7657380	2	
6	1.7002352	4	0.5361111	2.3963788	2	
7 (17)	2.5818384	9	2.2666664	3.7919776	3	
8 (24)	1.8840444	4	0.5500000	2.5243387	3	
9 (8)	3.1686201	8	1.8027776	3.4651763	3	
10 (13)	2.4896300	5	0.5611111	2.8762703	3	
11 (15)	1.5843101	3	0.3777778	2.1966808	3	
12 (3)	1.6211543	3	0.5000000	2.1398363	3	
13 (19)	2.1124132	5	0.7944444	2.7493186	3	
14 (16)	2.0502837	5	1.1277777	2.7185187	3	
15 (20)	1.5154271	3	0.8250000	1.8958101	3	
16	1.5843101	3	0.3777778	2.1966808	3	
17 (9)	1.5154271	2	0.3750000	1.6588341	4	
18 (12)	1.7874267	6	1.7416666	2.9730210	4	
19 (6)	2.9045684	10	2.6999996	4.0296574	3	
20 (5)	2.0502837	5	1.1666666	2.6888587	3	
21 (10)	2.0502837	4	0.9666666	2.5243387	4	
22 (18)	1.5154271	2	0.3250000	1.6588341	4	
23 (7)	2.4896300	8	1.8166665	3.4759791	3	
24 (22)	1.3405700	2	0.4444444	1.6588341	4	
25	1.7427410	4	0.8916666	2.3963788	4	
26	1.5843101	3	0.5583333	2.1398363	4	
27	1.5154271	3	0.6333333	2.0206244	4	
28 (11)	1.5843101	2	0.2666667	1.9615167	4	
29	1.5491031	3	0.5500000	2.0811150	4	

Note: The numbers in the bracket are observational gate numbers

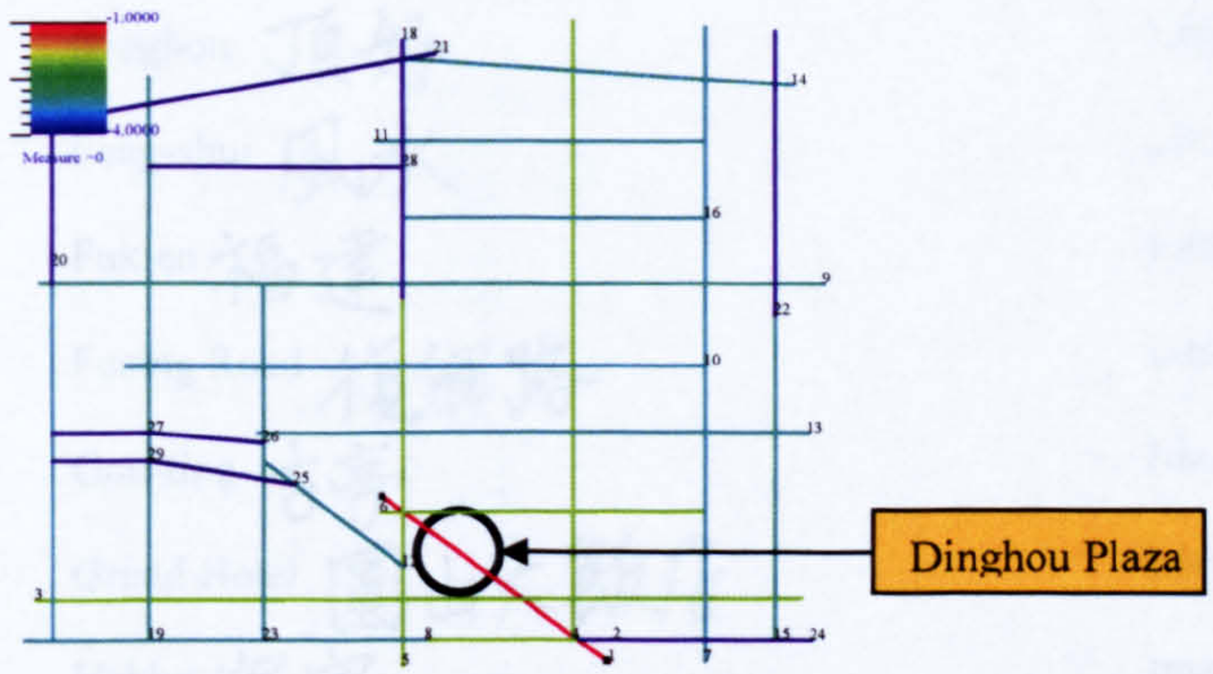


Fig.6A-8: Depth map of Dinghou quarter -- the carrier at Dinghou Plaza relative to other spaces.

Glossary

Anshi 安西

Changchow 彰州

Cheng ch'eng-kung 鄭成功

Chen cheng-sheng 陳正祥

Chen chi-nan 陳其南

Cheng-tu Road 成都路

Ch'eng-chung 城中

Cheung-sha Street 長沙街

Chiang kai-shek 蔣介石

Ch'ien-cheng 建成

Chingmei 景美

Ch'ing-shui Tsu-shih-kung miao 清水祖師公廟

chins 進

Choi li 周禮

Chuanchou 泉洲

Chung-hsiao East Road 忠孝東路

Chung-shan 中山

Chunghua Market Place 中華商場

Dian 大安

Dinghou 頂好

Feng-shui 風水

Fukien 福建

Fusing Road 復興路

Gou-ting 古亭

Grand Hotel 圓山大飯店

Hakka 客家

Hanchung Street 漢中街

Hangkung 漢宮

Hengyang Road 衡陽路

hsieh-tou 械鬪

Hsimen 西門

Hsimenting 西門町

Hsinchi 新起

Hsinchu 新竹

Hsui yue-chien 徐裕建

Huanho South Road 環河南路

Huashi Street 華西街

Hui-tien 會典

Jenai Road 仁愛路

Kangting Road 康定路

Keelung river 基隆河

Kuangfu South Road 光復南路

Kuei-yang Street 貴陽街

kungchia 公家

Kwangtung 廣東

Laotzu 老子

Lin heng-tao 林衡道

Liu ming-ch'uan 劉銘銓

Lungshan ssu 龍山寺

Lungmun 龍門

Ma-tsu 媽祖

Meng-chia 艋舺

miao-ch'eng 廟埕

ming-tang 明堂

Mucha 木柵
Nanjing Road 南京路
Neihu 內湖
Oimei Street 娥媚街
Oituen 愛群
Pao-chia 保甲
Peitou 北投
ren 人
San-I 三義
Sei-mun Street 西門街
shehui 社會
Sheng-yuan 雙園
shihfang 四方
Shihlin 士林
Shinshen Road 新生路
Shintien River 新店溪
Ssu-tien 寺典
Sun chuan-wen 孫全文
Sun yat-sen 孫逸仙
Sungchiang Road 松江路
Sungshan Road 松山路
Ta-lung-t'ung 大龍峒
Ta-tao-ch'eng 大稻埕
Tai-pei fu 台北府
Taipei chow 台北州
Taipei hsien 台北縣
Taipei ting 台北町
Tai-tung 大同
Tamshui River 淡水河
tao 道
Tao-te-ching 道德經
Tien 天
T'ien-hou kung 天后宮
Tien-ren-ho-yi 天人合一
Tihua Street 迪化街
T'ing-tzu-ch'ao 亭仔腳
Tsung-miao 宗廟
Tu-ti-kung miao 土地公廟
Tunhua Road 敦化路
Tz'u-chi 祖祭
waishenjen 外省人
Wanhua 萬華
Wanta Road 萬大路
Wuchang Street 武昌街
Yangming shan 陽明山
Yen-ping 延平